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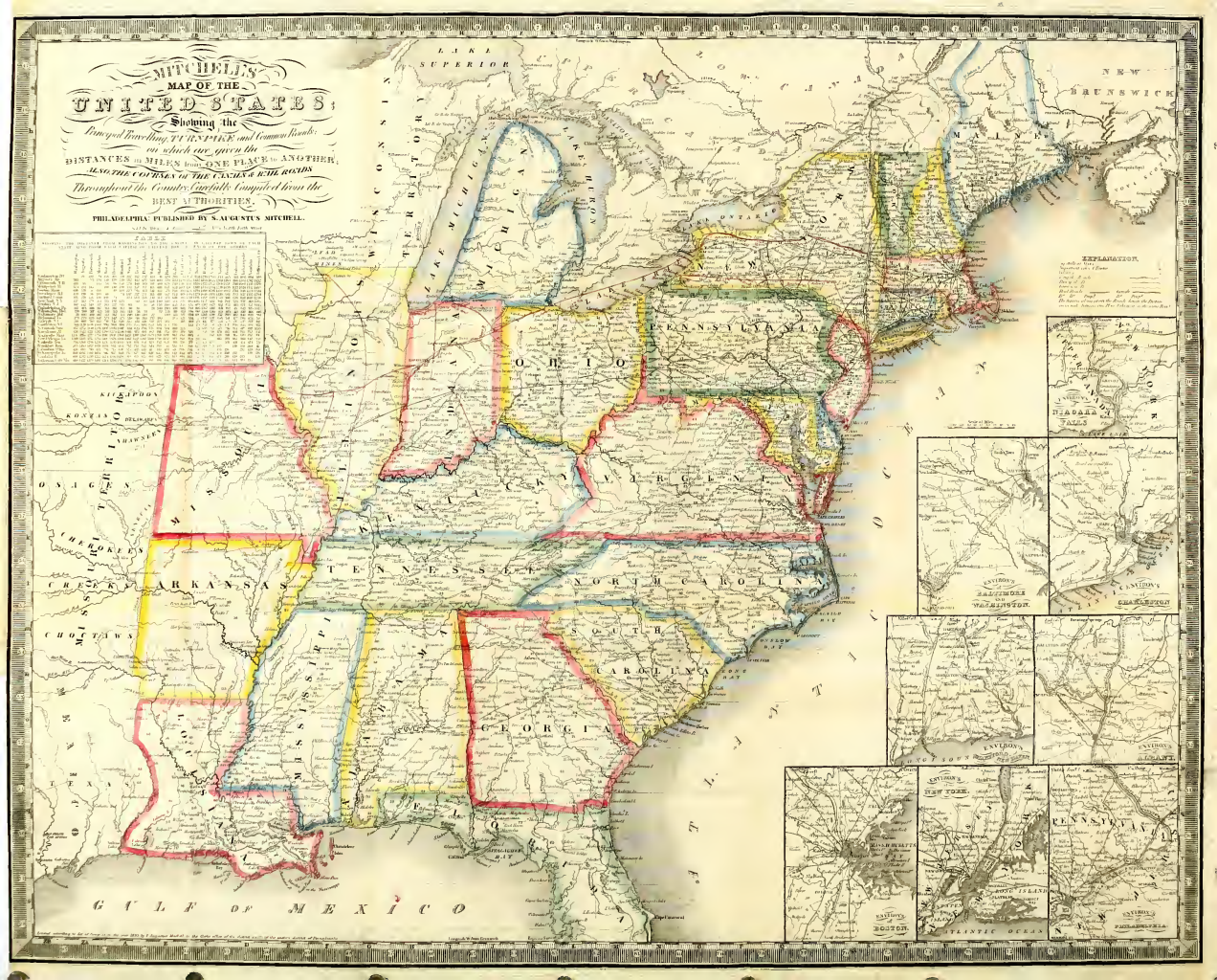
MITCHELL'S
MAP OF THE
UNITED STATES;
Shewing the
Principal Travelling, TURNPIKE and Common Roads;
on which are given the
DISTANCES in MILES from ONE PLACE to ANOTHER;
ALSO THE COURSES of the CANALS & RAIL ROADS
throughout the Country carefully Compiled from the
BEST AUTHORITIES.
PHILADELPHIA: PUBLISHED BY S. AUGUSTUS MITCHELL.
TABLE
LAKE SUPERIOR
NEW BRUNSWICK
MAINE
TERRITORY OF WISCONSIN
LAKE MICHIGAN
LAKE HURON
LAKE ONTARIO
PENNSYLVANIA
OHIO
INDIANA
ILLINOIS
MISSOURI
KENTUCKY
VIRGINIA
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ARKANSAS
MISSISSIPPI
ALABAMA
LOUISIANA
TEXAS
GULF OF MEXICO
ATLANTIC OCEAN
EXPLANATION
NIAGARA FALLS
ENVIRONS of BALTIMORE and WASHINGTON
ENVIRONS of CHARLESTON
ENVIRONS of SAVANNAH
ENVIRONS of NEW YORK
ENVIRONS of BOSTON
ENVIRONS of PHILADELPHIA

VALLEY

OF THE

UPPER WABASH,

INDIANA,

WITH HINTS ON ITS

AGRICULTURAL ADVANTAGES:

PLAN OF A

DWELLING, ESTIMATES OF CULTIVATION,

AND NOTICES OF

LABOR-SAVING MACHINES.

BY HENRY WILLIAM ELLSWORTH.

1814-1864

NEW YORK:

PUBLISHED BY PRATT, ROBINSON, AND CO.

1838.

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INTRODUCTION.

THE writer of the following pages was led to their preparation from a desire to answer numerous inquiries addressed to him by friends, and inability to effect that object, without a great expense of time and labor, in the ordinary modes of correspondence. To the daily routine of his profession, have been added the constant claims of an extended agency, and in the midst of all these duties, letter after letter has accumulated on his hands. The interrogatories, too, which they contained, were often those requiring a minute investigation. Information has been sought in regard to the purchase and sale of lands; the cost and profit of their cultivation; the products best adapted to their soil; the income to be derived from different agricultural operations; the benefits resulting from the introduction and use of various labor-saving machines; together with the lines of communication open, or to be established, as well for travel as the exportation of produce.

To impart such information is the object of this work. Over this extended field, the writer has endeavored to proceed and gather those particulars which will enable his readers to arrive at just conclusions in regard to the inquiries mentioned. He acknowledges, with pleasure, the benefit he has derived from personal communication with many of the most intelligent d an successful farmers of the western States, whose kind attentions and assistance will be

long remembered. He is also indebted to others interested in the objects he has been pursuing, and to none more than the Honorable Henry L. Ellsworth, of Washington, District of Columbia, whose extensive correspondence with agriculturists throughout the Union, he has been permitted to examine and to use. From sources such as these, joined to his own observations, has this volume been prepared.

It is fortunate for this young country that the study of scientific agriculture, in its various branches, is fast gaining the attention of those whose discriminating minds perceive at once its vast advantage, and whose means allow a full indulgence in its lucrative pursuits. Periodicals, which have for their sole object the advancement of this great source of national aggrandizement, are arising into notice, and disseminating the most valuable information through all portions of our nation. It is here, if any where, that this science can attain its greatest height. We are emphatically an agricultural people, destined to derive from the productive country with which Providence has blessed us, much that will contribute to our future wealth and honor. Fettered by no blind attachment to customs which have nothing to commend them but their long existence; in a new land, and surrounded by a fresher nature, we are free to enter on a field of hitherto unknown experiment, where prudence and attention must insure success.

And to no portion of our Union can remarks like these apply with greater force than to the western States. The surpassing fertility of their soil, the general mildness of their climate, and their most felicitous

position, seem to mark them as a spot more suited than all others to the purpose we have mentioned. And yet, how little has been known of their true prospects and condition! Who, beyond the mountains that divide these States from the eastern portion of our Union, can estimate their wonderful rapidity of growth, and their approaching greatness? Who can calculate the future vastness of that population, to which, not years, but days, and hours, and moments, are continually adding?

No better description of the actual condition of the northwestern States can be found than that furnished in a late report from the Committee of Ways Means to the Legislature of New York. While considering the benefits to be derived from the enlargement of the Erie canal, and the enormous results to be expected from it as a thoroughfare for the immense products of the west, the author of that report (S. B. Ruggles, Esq.,) presents the following graphic sketch of the present wealth and approaching greatness of that portion of our Union:

"The western termination of the Erie canal looks out upon Lake Erie, the most southerly and central of the great chain of navigable lakes, which stretches far into the interior from our western boundary. Around these inland seas, a cluster of five powerful States is rapidly rising. The territory which they comprise, and which is to become tributary to the canal, embraces that great area, extending from the lakes on the north to the Ohio on the south, and from the western confines of this State to the Upper Mississippi, and containing 280,000 square miles. To measure its extent

by well known objects, it is fifteen times as large as that part of the State of New York, west of the county of Oneida; nearly twice as large as the kingdom of France; and about six times as extensive as the whole of England. It contains 180 millions of acres of arable land, a large portion of which is of surpassing fertility.

"The productive power of this region, and its capability of supplying tonnage for export, are greatly strengthened by the facilities which it enjoys for cheap and easy transportation. In this respect, no country on the face of the globe enjoys greater natural advantages; for it is nearly encircled by navigable waters; and its broad area is intersected in numerous directions by streams furnishing ample means of conveyance, while unusual facilities for the construction of canals, and other artificial channels of communication, are afforded by the level and uniform character of its surface.

"These being its geographical advantages, it needs only the requisite number of inhabitants, to fully develop its agricultural resources. Its progress in this respect has been truly surprising. In 1816, Ohio was the only organized State Government within its limits. In that year, Indiana, having obtained the requisite number of 60,000 inhabitants, entered the Union, and took its place by the side of Ohio. Illinois and Michigan were then distant and feeble territories, with a few settlers thinly scattered over their broad surface; while Wisconsin, unknown even by name, was an undistinguished portion of the great Northwestern Territory. In the brief period of twenty-one

years, such has been the influx of population into this great district, that Ohio, the eldest member in this brotherhood of nations, now numbers 1,400,000 inhabitants; Indiana, upwards of 600,000; Illinois and Michigan, (both of whom have organized their Governments and come into the Union,) 700,000; while west of Lake Michigan, not only is Wisconsin rapidly rising, but even beyond the Upper Mississippi, 30,000 citizens have already laid the foundation of yet another State. Such is the onward march of this population, that the amount of its annual increase alone exceeds in number the white inhabitants of ten of the States of the Union. The population already embraced within the district in question, falls little short of three millions, and if the same rate of progress shall be maintained for the twelve years next to come, by the year 1850 it will exceed six millions.

"The peculiar activity and energy of these people, and their power most rapidly to develop the resources of the broad domain which they inhabit, are also worthy of consideration, in estimating the eventual extent of their trade. They probably possess a greater aggregate power of production than any other portion equally numerous of the human race. Their population is made up almost exclusively of the young, the resolute, the vigorous, and the intelligent, who have gone from the more crowded communities in the eastern and middle portions of the Union, to seat themselves around this chain of waters, and there build up an empire. They have taken with them the laws, the habits, the language, and the institutions, civil and religious, of their parent States; but above

all, they have carried into that vast field an honest love of labor; and in the very act of organizing their governments, they testified their willingness to exert and rely on their own energies, by prohibiting slavery forever, throughout all their limits." *

Such is the present situation of these States which, a few short years ago, presented little else than one unbroken forest, tenanted alone by the untutored savage. How rapid and startling has been their elevation; how proud their position, and how flattering their prospects!

From this fertile and rapidly increasing portion of our country, the writer has selected Indiana, and of that State, the rich Valley of the Wabash, as the subject of his remarks throughout the following pages. He has done so partly because it was his residence, and of course best known to him; and again, from its acknowledged inferiority to no portion of similar extent throughout the Union. Indeed, the position of that valley, the extraordinary productiveness of its soil, its delightful climate, and its means of rapid communication with the markets of the northern and southern States, seem to designate it as a region better adapted than any other as the field of agricultural experiment, and the home of the enterprising settler. And if, in conclusion, he shall have pointed out to one deserving emigrant the path to honorable independence, or added aught of interest to the abode which he has chosen, he will not regret the few short hours of labor he has spent amid the pages of this volume.

HENRY W. ELLSWORTH.

LAFAYETTE, *September*, 1838.

* For further extracts from this valuable Report, see Appendix.

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LETTER TO THE AUTHOR FROM THE HON. H. L. ELLSWORTH, OF WASHINGTON CITY.

WASHINGTON CITY,

September, 1838.

MY DEAR SIR: I have just finished the perusal of your sketches of the "Upper Wabash," and doubt not the friends to whom they may be sent, will read them with the same degree of pleasure as myself.

Your remarks on the geographical and physical advantages of that valley, are well calculated to arrest attention. Some of the estimates given of cultivation and produce, may be viewed with incredulity; still, enough remains after a deduction for contingencies, to encourage and stimulate any one who has a spark of enterprise.

If the health of the inhabitants can be so easily promoted, by the substitution of a comfortable cottage and well, for the coarse log cabin and the running brook, I sincerely hope the adventitious aid of labor-saving machines, will be invoked to bring the expense within the means of every proprietor. A thirst for *immediate profit* has been too much the master passion of our enterprising emigrants, and hence the sacrifice of so many valuable lives to avarice. Health is paramount to riches, and I rejoice in every attempt to secure or improve it.

May you, my dear sir, not be disappointed in your present expectations. The field of usefulness is great, and if I am not much mistaken in the character of the State you have selected, you will find a generous, and noble hearted people, ready to appreciate professional and benevolent efforts. Expecting to meet the ordinary trials and discouragements of a new country, you will, I know, bear them with fortitude. These small privations of early life seem inseparable from the lot of western pioneers, but they greatly heighten the fruition of our riper years.

If distance must separate us from each other, we welcome the approach of those events which are so emphatically to remove the barriers of space, and afford us the endearments of social intercourse. The country in which you dwell, needs only to be known, that it may be justly estimated. I can truly say, that after a personal inspection of a great part of the United States, I have seen no portion of our Union

more beautiful in its appearance, or one combining so many advantages, as that which is watered by the Wabash river.

I hope you will extend agricultural improvements, as far as your means will allow. I shall cheerfully communicate, from time to time, such information on that subject as I can collect. In addition to the machines already ordered for Lafayette, I shall soon send others, calculated for ditching, sowing, reaping, raking, flax pulling, &c., all of which, though they are of late invention, have been sufficiently tested to be introduced without hesitation.

I will not add more to my letter, bearing the approval of your small publication. With courage to undertake, industry to execute, and perseverance to continue our designs, much indeed can be accomplished in man's short existence! But alas, "our purposes may be broken off," and the hopes we cherish may be blasted in the very bud of promise. The past admonishes us of the mutability of all things human; confirms the conviction that there is little here below which we can call our own, and directs our thoughts to that high destiny which awaits on immortality.

With many wishes for your present and future happiness, I remain, as ever,

Yours, affectionately,

H. L. ELLSWORTH.

To Henry W. Ellsworth, Esq.,

Lafayette, Indiana.

CHAPTER I.

Geographical position of the Wabash valley. General description of its soil and appearance. Causes which have existed to retard its settlement. Mode of their removal. Wabash and Erie canal. Position of Lafayette. Tippecanoe county. Depth of prairie soil. Geological position of Indiana the cause of its fertility. Coal formations at Danville, Illinois.

Whoever casts his eye over a map of the United States, will be struck with the geographical position of the Wabash valley, and wonder why so little is known of its physical resources. The State of Indiana contains an area of 37,000 square miles, and a population of 700,000 inhabitants, yet the northern portion is almost unsettled. That part of the State has hitherto been held by tribes of Indians, whose titles, if we except a few reserves to the Miamies, are now extinguished, and is daily coming into market under the most favorable circumstances. No location offers to the settler inducements superior to those presented by the valley we have mentioned.

The valley of the Wabash is that tract of land receding from 20 to 40 miles on each side of the Wabash river, throughout its whole extent. It may be regarded as commencing about 20 miles southeast of Fort Wayne. The soil is one of extreme fertility, the climate mild, and various lines of communication are now in process of construction, which will greatly facilitate emigration, while they furnish a sure eastern market for produce. The traveller who passes through this most productive valley, meets continually with much calculated to excite his admiration. For

miles, his course frequently meanders along the borders of some gently rolling prairie, whose surface, as far as the eye can reach, seems gemmed with flowers of all varieties, the brilliancy of whose coloring baffles all description. Again, his path, more open than before, will lead him through these beautiful *parterres* of nature, and along the banks of many a sweet stream, that winds round and round in almost innumerable convolutions, as if flowing with reluctance to pour out its treasures on the waters of the Wabash. Again, leaving this enchanting region, he journeys amid the deep solitudes of a western forest, whose silence is broken only at intervals by the bounding footstep of the deer, or the sharp crack of the rifle.

The cause which has hitherto prevented the true advantages of this delightful valley from being known, is found in the extreme difficulty of gaining access to it, by any of the established routes of Indiana. The Wabash river, susceptible as it is of improvements which would secure a constant navigation, has, until lately, furnished an uncertain thoroughfare. A journey to the Upper Wabash, from the Ohio river, by land, owing to the extreme roughness of the roads; the difficulty of obtaining suitable vehicles and accommodations, and withal the distance, was one of extreme fatigue, while all approach from Lake Erie, by the Indian trails and traces of the Maumee river, could be undertaken only with a single horse, and often at a risk of long and serious detention, from innumerable by-paths, and streams almost impassable. The single pioneer and hardy hunter could indeed press through these obstacles; but the emigrant, with his family, could travel only the more convenient

routes along the borders of the State. Thousands in this way, emigrating from our eastern sea-ports, have passed from Buffalo to Detroit, from thence to Chicago, and finally settled on the lake shore, or near the water courses. This facility of water communication has already caused the settlement of parts of Michigan. The enterprise of her citizens has opened roads to the interior and southern portions of her growing State, and many are now emigrating from thence to the adjoining portions of Indiana. Those, who after a short residence in Michigan, dispose of lands at $15 or $25 per acre, can find tracts even more productive at $1 25 in Indiana.

Such have been the causes which existed to retard the settlement of northern and northwestern Indiana. They are now rapidly disappearing; a few months more will witness their complete removal, and an emigration to a spot so well fitted by nature to sustain it, will take place, hitherto unprecedented even in the history of western settlements. The magnificent internal improvement schemes of Indiana, involving an expense of many millions, are fast developing the vast extent of her resources, and opening in all directions certain avenues of quick communication to the enterprising settler.

During the ensuing year, (1839,) the Wabash and Erie canal, a work conducted by the States of Ohio and Indiana, and designed to form an important link in the great chain of communication now opening between the Mississippi river and the city of New York will be completed. At the present time boats are running daily from Logansport to Fort Wayne, a distance of about 80

miles. The heavy sections on the remaining portion of the canal between Lafayette, the head of steamboat navigation on the Wabash, and Logansport, are now completed, and the lighter are in progress, and will soon be finished.

From the vigorous exertions of Ohio, and the time as settled by contract, there is little doubt but what that portion of the canal which passes through her territory will be completed by the 1st of October, 1839. The opening of this canal throughout its whole extent, will indeed be a proud era for the Wabash valley; and furnishing, as it does, the most direct and natural channel of communication between the east and west, we can hardly estimate the travel that will flow in this direction.

The place at which this great canal first strikes the Wabash, at a navigable point, is one of vast importance, and is occupied by the town of Lafayette, the county seat of Tippecanoe county, situated in the very heart of the Upper Wabash valley, at the present and perhaps permanent termination of the canal above described. At the termination of a railroad which will be soon constructed to the State line of Indiana, and thence by the State of Illinois to the Mississippi river, and with rail and Macadamized roads, running north and south to Michigan and the Ohio river, for which ample provision has been made, Lafayette is destined to become by far the largest town of the Upper Wabash valley; and, with the exception of Fort Wayne, the most important point of northern Indiana.

The county of Tippecanoe, in which Lafayette is situated, contains an area of 504 square miles, and

yields in point of fertility to no portion of similar extent throughout the State. It embodies and is immediately surrounded, by some of the most beautiful prairies and plains of Indiana—such are the Wea, Shawnee, Wild Cat, and Grand prairies; and contains numerous rapid and never failing streams, affording excellent mill sites. Much of the prairie land which forms the borders of the Wabash is admirably adapted to grass, as well as wheat and grain of all descriptions, and varies in depth from three to thirteen feet, according to its position, as upland or bottom prairie. These latter acquire their depth of soil from annual deposites of the Wabash and other rivers.

The opening of the Erie and Wabash canal will afford an immediate outlet for much of the produce of this and the adjacent counties. The main channel for the exportation of produce heretofore has been the Wabash river, by means of which vast quantities have been shipped annually to the States bordering on the Mississippi and to New Orleans. Many exceedingly profitable speculations have been made in pork, and a large amount is put up every season. Investments of capital, yielding great returns, can easily be made from well conducted stock farms,—by raising and pressing hay for the southern markets,—from wheat, corn, &c. &c. The recent introduction of labor saving machines, all of which are admirably calculated for the prairies, has materially reduced the former expense of cultivation. The cost of cultivation, together with the yield of different grains, and the profits attending various branches of agriculture, will be detailed under their respective heads hereafter.

The geological position of Indiana is the main cause

of its fertility, and to no portion of the State will the remark apply with greater force than to the Upper Wabash. In addition, also, to this fertility of soil, other advantages occur, in the bituminous coal formations which are found at no great distance from the town of Lafayette, along the Wabash.

The following remarks from D. D. Owen, Esq., a gentleman of high talent, and State geologist of Indiana, as embodied in his report of December, 1837, are well deserving a perusal. After mentioning the three principal geological formations of the State, which he classes as a bituminous coal formation, a limestone formation, and a diluvium, he proceeds as follows:

"If we were to speculate from geological observations on the future condition of Indiana, we should say that the *western counties* are destined to become one day the chief manufacturing counties, since, with a few exceptions, all large manufacturing towns and districts are situated on the coal formations."

* * * * * *

"In several places, particularly towards the base of the coal formation, or near its eastern boundary, as at Attica, Williamsport, on Pine creek, and near the French lick, with a little care, freestone, white and fine grained, and excellently suited for architectural purposes, may be readily obtained. In character and geological position it resembles the celebrated Scotch freestone, of which the new town of Edinburgh, and a portion of the town of Glasgow, are built." * * *

* * * * * *

* * * * * *

"Some of our clay in the coal formation answers well for the manufacture of stoneware: such wares are now manufactured from them at Troy.

"It is well known to geologists that that soil is most productive which has been derived from the destruction of the greatest variety of different rocks, for thus only is produced the due mixture of gravel, sand, clay, and limestone necessary to form a good medium for the retention and transmission of nutritive fluids, be they liquid or æriform, to the roots of plants. Now, Indiana is situated near the middle of the great valley of north-western America, and far distant from the primitive range of mountains, and her soil is accordingly formed from the destruction of a vast variety of rocks, both crystalline and sedimentary, which have been minutely divided and intimately blended together by the action of air and water. It has all the elements, therefore, of extraordinary fertility."

The excellent locations of freestone mentioned by this able geologist, are nearly all situated within a few hours ride of Lafayette. A few miles beyond the State line of Indiana, immediately contiguous to Danville, a most flourishing town of northeastern Illinois, and the point of connexion between the Lafayette and Mississippi railroad, will be found coal formations of great depth and extent; all of which can be easily worked, and the product conveyed along the line of railroad and canal communication to any portion of the Upper Wabash. It may be well to mention, in passing, that salt-works, of great yield, are now in operation a few miles from Danville.

CHAPTER II.

Danville and Mississippi railroad. Lafayette and Danville railroad. Advantageous provisions of its charter. Probable cost of the work. Amount of capital stock. Inducements offered capitalists for investment. Central railroad of Illinois. Great advantages to be derived from these works when completed. Sketch of important towns in northern Indiana: Fort Wayne, Wabash, Lagrove, Peru, Logansport, Delphi, Lafayette, South Bend, St. Jo County, Indianapolis.

By an act passed at the General Assembly of the State of Illinois during its session of 1836, securing similar internal improvements to those of Indiana, sums are provided for the completion of several works of great importance. We propose to notice hastily one or two of those connected with the outlets of the Wabash valley. By section 18 of the bill referred to, a sum of $100,000 is appropriated to remove the obstructions of the Wabash river, (a similar sum having been granted for that object by the State of Indiana.) Further appropriations have been made for this purpose, and work to the amount of $167,000 is now under contract.

By the *ninth* clause of the same section, the following provision is made for a railroad "from Quincy on the Mississippi river, *via* Columbus and Clayton in Adams county, Mount Sterling in Schuyler county, Meredosia and Jacksonville in Morgan county, Springfield in Sangamon county, Decatur in Marion county, Sidney in Champaign county, and *Danville* in Vermillion county, and *thence to the State line in the direction of Lafayette*, Indiana, &c. &c.; for the construction and completion of which said railroad and appendage, the sum of one million eight hundred and fifty thousand dollars is hereby appropriated, exclusive of the necessary sum for constructing a bridge over the Illinois river, to be appropriated whenever said bridge may be authorized by the Legislature."

Of this railroad, designed to connect the waters of the Mississippi with the Wabash at Lafayette, 78 miles *are under contract, and each mile actually under work.* Less than two years, it is supposed, will be sufficient to complete this great inland route, and give to the fertile portion of Illinois, through which this railroad passes, a constant market for its produce.

The sole remaining space in this extended line of internal improvement, is that between the Illinois State line and the town of Lafayette, and for which provision has been made by an act of the General Assembly of Indiana, approved February 5, 1836.

This act incorporates a company with extended powers to construct a railroad from Lafayette to the State line, designed to connect with the Illinois survey. The charter is one conferring, in many respects, extraordinary advantages, and will be found entire in No. 1, of the Appendix. The following abstract presents a few of its main features:

1. The capital stock of said corporation is five hundred and fifty thousand dollars, divided into shares of one hundred dollars each.

2. Said corporation have the power of uniting with any other railroad or canal company which is already incorporated by the State of Indiana, "or with any other railroad or canal that may hereafter be under the control of this State, or any other of the United States, for the making of a continuation of the said railroad, or of any other railroad from the State line of Illinois to the town of Lafayette, in the State of Indiana, and thence to any other point in the said State of Indiana or other State of the Union, upon such terms as may be

agreed upon with the directors of said company, or agents authorized to manage said railroad or canal."

3. The said corporation are authorized and empowered to borrow any sum of money, upon their own credit, which in their discretion may be deemed necessary, not exceeding the full amount of their capital stock, to aid in the construction or repair of said work; and in case it shall at any time appear to said corporation that any part of the money so borrowed, or any paid in by the stockholders, or any surplus fund belonging to said corporation, is not necessary to be retained for immediate use, the same be loaned on such terms as the directors of said corporation may in their discretion deem proper, at such rate of interest as is now allowed by the laws of this State to be taken for money loaned.

4. The corporation shall commence the construction of said road at or near the town of Lafayette, at any time within three years, and from time to time construct so much thereof as may be within the ability and to the interest of the company: Provided, that the road shall be completed within ten years after the passage of this act.

This charter is limited in its duration to fifty years.

It is stated by able engineers that the sum of $3,000 per mile is *ample* for the construction of this railroad, with a single track, across the prairies. Nature has already graded nearly the whole way. The distance from Lafayette to the proposed point of connexion with the Illinois railroad, will not vary far from fifty miles, and the sum of $150,000, at the rate above, would complete the work. Indeed, the *interest alone* on the capital stock of $550,000, would finish the whole road within three years from its commencement.

The books of the company have just been opened, and the stock, it is presumed, will soon be taken. From its liberal charter and advantageous situation, hardly a doubt can exist in the mind of any one of the success of the Lafayette and Danville railroad. Eastern capital could doubtless be secured for an investment promising such sure and large returns.

A subscription of $225,000 is necessary to secure the charter. The company is authorized to loan any part of its capital or surplus at the highest interest allowed by law, at the passage of the act, which is 10 per cent. This privilege secured for fifty years, without the power of revocation, must certainly furnish a strong inducement to the mind of every capitalist.

Even could a doubt remain as to the income derived from passengers on this portion of a great national route, the inexhaustible beds of coal at Danville, Illinois, would furnish constant employment to any motive power that could be placed upon the road, and alone sustain the credit of the stock. The freight of ordinary merchandise must also equal that on any other road of similar extent.

It may be proper to add here that a railroad is now constructing from the confluence of the Ohio and Mississippi rivers, running through the centre of Illinois, and meeting the great eastern and western railroad above described at Decatur, about 80 miles from Danville.

Such are a few of the most important works undertaken by the sister States of Illinois and Indiana, tending to open a direct communication between one of their most fertile portions, the Wabash valley, and the east. A slight inspection of the map will convince the

observer that the facilities offered to the travelling community by these routes will be immense. No doubt can exist but that the Wabash and Erie canal, in connexion with the Lafayette and Illinois railroad, must furnish the *main* route, not only of produce but travel, from the western and southwestern to the eastern States. Central railroads, running lengthwise through the States of Indiana and Illinois to the Ohio, and intersecting, at favorable points, the great northern line of communication passing through these States, from the Mississippi to Lake Erie, must, unquestionably, carry to the upper route much produce that has heretofore been transported on the Ohio river.

By the routes before described, travellers coming up the Mississippi and going eastward, can take the railroad at the mouth of the Ohio, and in a *single day* arrive at Lafayette, while those from St. Louis can reach the Wabash in still less time. Allowing two days more, *via* canal, to reach Lake Erie, one day to pass over the same, and one day and a half (or 36 hours) by the Southern railroad to the city of New York, it will require only 5 days to reach St. Louis from New York, and 5½ days from New York to the mouth of the Ohio river.

The changes that will be effected by the completion of these works, during the present and coming year, can be better conceived than described. An expeditious and convenient access for the emigrant will be presented, to a country whose local advantages have been hitherto unknown, and the most productive portions of the fertile States of Illinois and Indiana will be offered for the immediate occupancy of the enterprising settler. Large tracts of choice prairie land, *ready for the plough*, can

still be procured at the low price of $1 25 per acre, while sufficient wood-land can be bought at no great distance, as it may be needed. It is indeed cheering to reflect, that these fertile portions of Indiana and Illinois are so soon destined to gain the distinction to which they are entitled, and that the varied products of their soil will be found in eastern markets, by the side of those derived from regions hitherto more favored.

The traveller who, even at the present time, passes along the route we have described, will be struck with the rapid growth and city-like appearance of many of its towns. From Fort Wayne, near the northeastern confines of the State of Indiana, formerly an Indian trading post, and now a point of great importance, from its situation on the canal,—its connexion by inland routes with Michigan, and the extreme productiveness of the surrounding counties, he will meet with a succession of flourishing towns and villages, whose commencement and existence lie within the circle a few past years. Starting at the village of Huntington, distinguished for its quarries of stone excellent for architectural purposes, and pausing a few moments, near the splendid reservation of six sections, granted to the chief of the Miamies, he finds himself within the valley of the Upper Wabash. Continuing his course, the new and stirring villages of Wabash and Lagrove soon meet his eye; and a little farther on the business-like appearance and prosperous condition of Peru, with its fine court-house and other public buildings, all denoting the enterprising spirit of its inhabitants, rivet his attention. From thence, by a pleasant ramble of 18 miles along the Wabash, he arrives at Logansport, a

town distinguished for the beauty of its site, and general neatness of appearance. Its reputation, as a healthy and agreeable residence, is not among the least of the advantages which it possesses. It stands at the confluence of Eel and Wabash rivers, and derives a vast amount of water power from both these streams. It would seem, from various causes, that Logansport is destined to become, at no distant day, one of the most thriving towns upon the line of the canal.

Following the course of the canal and Wabash river, the next important town is Delphi, the seat of justice for Carroll county. Surrounded by a country of extreme fertility, this town seems rapidly advancing to an enviable situation. The canal passes through it, and a dam, just finished across the Wabash, furnishes a large amount of water power. The rich bottoms of the river below the town, have been long distinguished for their great productiveness. A few miles farther on will be found the recently established town of Americus, with quarries of fine stone, convenient to the river.

The whole distance of 18 miles from Delphi to Lafayette, presents a succession of the most beautiful landscapes. Crossing the Wabash just below the town, and passing through the bottom prairie we have mentioned, the traveller ascends by a gentle elevation to a reach of table land, across which lies his course for several miles. This short distance, however, is soon passed, and its termination announced by the sudden appearance of the beautiful valley laved by the waters of the Tippecanoe. The fording of that rapid stream, and a few bounds over the velvet sward beyond, con-

vey the traveller to the foot of a steep rise, at the summit of which commences another of those upland levels, known by the appropriate appellation of "Pretty Prairie." A few miles along this elevation, in the course of which appears the celebrated battle ground of a late Indian war, (the scene of General William Harrison's exploits,) and the Wabash river is re-crossed; the road passes over another of the richest lowland prairies, and disappears in the small forests that environ Lafayette.

We have again reached that point, before mentioned, as the present and perhaps permanent termination of the canal connecting the waters of Lake Erie with the Wabash. Here, also, is the termination of the Illinois railroad, or the place of its connexion with the great canal. The rapid increase of the town of Lafayette, from a settlement of scarce ten years ago, is truly astonishing, and can be accounted for only by the extreme felicity of its position. It contains at present a population of above three thousand; numerous large and well constructed buildings; churches for various denominations; extensive warehouses, hotels, &c. New buildings are constantly going up within its limits, and families are emigrating to it from the east, and from adjacent portions of the State. Steamboats, during the period of navigation, arrive and depart daily; ten were counted at the wharves at one time during the present season. A Macadamized road is now in process of construction from Lafayette to Crawfordsville, an extremely pleasant and thriving inland town, the seat of a flourishing college, under the direction of the Rev. E. Baldwin. From Crawfordsville, a continuation of the road is made to Indianapolis, and connects there with the railroad to the Ohio river.

Hydraulic power, of immense importance to Lafayette, will be created by the introduction of the Pouceaupichoux, or Wild Cat river, as a feeder to the canal, while its position at the head of steamboat navigation; at the connexion of railroad and water communication between the Mississippi and the eastern States; with a railroad running north to Michigan, and various roads to the Ohio and southern portions of the State, and a circumjacent country inferior to none in its fertility, seem to mark it as destined to become the largest town within the Wabash valley. Permanent navigation of the river will be secured by the completion of those contracts, for which we mentioned an appropriation of $167,000.

Before leaving a subject which exhibits so conclusively the resources of northern Indiana, there remain one or two places of importance, worthy of a passing notice. Indeed, did the limits of our work allow, we should be pleased to take our readers with us, through the flourishing towns that border on the Ohio, in the State of Indiana, and others situated near the line of Michigan. Of the former we may speak at length hereafter, though from their size and position they have long been known. Of the latter we have time at present to select but one. This is the rapidly improving village of South Bend, which we mention rather as an introduction to St. Joseph's county. This county comprises one of the best agricultural districts in the State, is exceedingly well watered, and embodies several of the most beautiful prairies of the west. Very *extensive formations of pure bog iron ore* are found in many places, and a large manufactory of iron is established

at Mishawaka, in the vicinity of South Bend. The advantages presented by this town and county are well worth the attention of the emigrant.

Indianapolis, the capital of the State, is another place of great importance. It may be regarded, with a few exceptions, as the grand centre of the various public works in process of construction by the State of Indiana. Its present population is estimated about 3,500. It contains many private dwellings of great beauty, and its capital is remarkable as a specimen of finished architecture. A large amount of water power will be afforded by the Central canal. Whoever reflects upon the rapid growth and *present* prosperous condition of Indianapolis, the capital of a State containing, even now, 700,000 inhabitants, cannot fail to anticipate its standing when the population of that State, as it must be, shall have doubled.

CHAPTER III.

General sketch of various lines of communication between the eastern and western States. Ohio canal, Miami canal, Chicago and Illinois sloop canal. Natural communication between the Mississippi and the Lakes by Green bay. Lafayette and Alton railroad. New York and Erie railroad. Facilities of travelling afforded by these routes.

In continuance of our remarks on some of the more important works of Indiana and Illinois, we rejoice at the opportunity of presenting to our readers an extended sketch of the principal lines of inter-communication between the western States, and again between these States and those bordering on the Atlantic. This

sketch is contained in a letter to the Hon. S. B. Ruggles, of New York, from the Rev. J. F. Schermerhorn, a gentleman whose high talents, extensive travel, and thorough acquaintance with all portions of our country, admirably fit him for the task proposed. A few of the works recommended in this communication, (written in 1834,) have since been undertaken or completed. We insert the entire letter, which has never yet been published.

WASHINGTON, *December* 24, 1834.

SIR: Your communication of the 18th instant has been duly received, and I give you, with great pleasure, such information as I possess, with regard to internal improvements in the western States. In answer to your important inquiries, I need only to state to you the canals and railroads that have already been constructed, and are now in progress, or will soon be commenced, to connect the waters of the Ohio and Mississippi rivers with the Northern Lakes, to convince you that it is the true policy and interest of our State to encourage and open, without delay, every possible channel of communication between Lake Erie and the city of New York. In order to be as definite as possible, I will assume Cleveland, on Lake Erie, as the point at which to commence the calculation of distances to important places on the different canals, lakes, and rivers, especially on the Ohio and Mississippi; from which you will be able to determine the shortest and most eligible routes to any given place.

1. The first in order, which we shall notice, is the Ohio canal, which is already finished, and in success-

ful operation. This commences at Cleveland, Lake Erie, and terminates at Portsmouth, on the Ohio, and is 307 miles in length. In the following table of distances, the first column denotes the distance from one place to the other, and the second column the whole distance from Cleveland to the place mentioned:

From Cleveland	*Miles.*
To Ackron - - - - - -	38
Massilon - - - - - -	27, 65
Columbus - - - - - -	150, 215
Chillicothe - - - - - -	40, 255
Portsmouth - - - - -	52, 307
Maysville, Kentucky - - - -	47, 354
Cincinnati - - - - - -	58, 432

Goods, by this route, from the east, are landed at Cleveland, and there put on board of canal-boats for Portsmouth, and here they are re-shipped on board of steamboats for their place of destination.

2. The Miami canal, which is already finished to Dayton, 63 miles. This will soon be completed to Maumee Bay, Lake Erie, making the whole distance from Cincinnati 265 miles.

From Cleveland	*Miles.*
To Maumee Bay - - - - -	90
Fort Defiance, say - - - - -	50, 140
Dayton - - - - - -	152, 292
Cincinnati - - - - - -	63, 355
Madison, Indiana - - - - -	89, 444
Louisville, Kentucky - - - -	54, 498
Wabash river, Indiana - - - -	244, 742

By the above two routes, all the goods from New York will probably be sent to different places on the Ohio, above the mouth of the Wabash river. And

the Miami canal route will have the decided advantage, because it is the shortest to Cincinnati by 77 miles, and will save one trans-shipment.

3. The Erie and Wabash canal. This is now constructing, and the whole distance from Lake Erie to Lafayette, the head of steam navigation on the Wabash, is about 215 miles.

From Cleveland	*Miles.*	
To Maumee Bay	90	
Fort Defiance	50,	140
Fort Wayne, about	50,	190
Logansport	75,	265
Lafayette	40,	305
Covington	53,	358
Terre Haute	71,	429
Vincennes	97,	526
White river	32,	558
Mouth of the Wabash	108,	666
Nashville, Tennessee	309,	975
Florence, Alabama	434,	1,100

You will perceive, by the examination of the above tables, that the distance to the Ohio river, at the mouth of the Wabash, by the Erie and Wabash canal, is 76 miles nearer than by the Miami canal, and 153 miles nearer than by the Ohio canal; so that the goods destined for places on the Cumberland and Tennessee rivers, and the lower part of the Ohio and Mississippi, will probably be forwarded through this channel, in preference to any other.

4. The Chicago and Illinois sloop canal, or railroad, is intended to extend from Chicago, on Lake Michigan, to Illinois river, at the mouth of Little Vermillion, a distance of about 100 miles. This work is not yet commenced, but it is deemed so important to that section of

the country that there can be no doubt of its being done, since the Congress of the United States have granted to the State of Illinois 480,000 acres of land, to aid them in its construction. The distance by this route to the Mississippi river, from Cleveland, is 1,234 miles.

From Cleveland			*Miles.*
To Detroit -	- - - - -	124	
Mackinaw	- - - - -	325,	449
Chicago	- - - - -	375,	824
Little Vermillion river or the Illinois -		100,	924
The Mississippi at the mouth of the Illinois -		250,	1,174
St. Louis	- - - - -	30,	1,204

Should the sloop canal be constructed, as probably it will be, and the State of New York also make a sloop navigation from Oswego, on Lake Ontario, to Albany, around the Falls of Niagara, you will then have an uninterrupted sloop or steamboat navigation from New York, of about 2,000 miles to the Mississippi river; and thence you may proceed to any port you please on the western waters, or return by way of New Orleans to New York. In this improvement, Ohio, Indiana, Illinois, Missouri, and Michigan are deeply interested, and as much so as New York; for although the distance will be greater to New York than by the Erie canal, or the projected Erie and New York railroad, yet as there will be tolls to pay on only about 300 miles of improved navigation, and the rest of the route is through the natural rivers and the lakes, it will always do a great share of the transportation of bulky and heavy articles. The ship canal around the falls is strictly a great national work, and is rendered necessary by the British, at present, having the decided advantage over us, on the lakes, by the Welland canal, and in case of war this would be severely felt.

There is also a natural channel of communication between the lakes and the Mississippi, by Green bay, Fox, and Wisconsin rivers, by which the distance from Cleveland to Prairie du Chien is about 1,180 miles. The Indian title to the lands to the south of this route has been all extinguished, and the whole country will soon be filled along this route to the Mississippi, by our enterprising citizens. The distances by this route are :

From Cleveland	*Miles.*	
To Mackinaw - - - - -	450	
Green Bay - - - - -	250,	700
The portage between the Fox and Wisconsin	180,	880
The Prairie du Chien or mouth of Wisconsin	150,	1,030

This was formerly one of the principal channels through which the Indian trade was carried on, upon the Mississippi ; and should this navigation be improved, which certainly ought to be done, some considerable portion, if not all, of the goods destined for the Upper Mississippi may be sent this way.

6. There is another improvement which ought to be undertaken immediately, and that is a railroad from Lafayette,* on the Erie and Wabash canal, to the Mississippi, to terminate at St. Louis or Alton. This would make the distance to either of those places by this route upwards of 550 miles nearer than by the Miami canal and the Ohio and Mississippi rivers; and about the same distance, if not more, than by the lakes, Chicago canal, and Illinois and Mississippi rivers. The length of this railroad would be only about 210 miles, through

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* A reference to chapter 2d will show the ample provision that has been made for this great work. Abstracts of the internal improvement laws of Illinois and Indiana will be found in the Appendix.

a very fine and fertile country, favorable for the construction of a railroad, and would pass through the very heart and centre of Illinois. If this route should be completed, it will be the principal western route travelled between New Orleans and New York, and between New York and the Upper Mississippi.

By this route the distances from the mouth of the Missouri to Cleveland and New York, would be as follows:

From Mississippi	*Miles.*	
To Lafayette - - - - - -	210	
Maumee Bay - - - - -	215,	425
Cleveland - - - - - -	90,	515
Portland - - - - - -	135,	650
New York city, by projected railroad - -	450,	1,100

If the whole of this channel of communication is once finished, a journey may be performed from St. Louis to New York within a week; and the merchants from that section of the country will be able to go to New York, transact their business, and return home in less time than it now takes them to make a trip to New Orleans and return. The construction of the railroad from the Mississippi to the termination of the Erie and Wabash canal is not only important to the citizens of Illinois, but also of Missouri, whose settlements already extend to the mouth of the Kansas river, 400 miles from St. Louis; and it is also important to the whole of the Upper Mississippi, as far as the Falls of St. Anthony, 800 miles above the Missouri. Through this channel, also, the goods destined for the Indian trade of the far west to the Rocky mountains would be conveyed, and the peltries and furs find their way to the Atlantic cities. I need only to direct your

attention to this subject to show you the importance of a short, expeditious, and direct route between the city of New York and the Missouri river. I have stated the whole distance could be performed in less than one week, and with ease and comfort to the traveller. And I will show you how it could be done: Suppose the traveller leaves the bank of the Mississippi on Monday morning at 4 o'clock, by railroad, for Lafayette—the distance (210 miles) at 15 miles per hour, would be run in 14 hours time, and he would arrive there at six o'clock the same evening. He here takes his supper, and starts again at 10 o'clock, P. M., on board a canal-boat, for Maumee Bay—distance 215 miles, at the rate of four miles per hour, which will require 54 hours, and he will, therefore, arrive at Lake Erie at 4 o'clock on Thursday morning. He leaves here by steamboat at 8 o'clock, A. M., for Portland—distance 225 miles, at the rate of 10 miles an hour, which will bring him to Portland on Friday morning at about 6 o'clock. Leaves here again at 8 o'clock, A. M., by the railroad for New York, distance 450 miles, which, at the rate of only 13 miles an hour, will bring him to the city of New York on Saturday evening before 8 o'clock; that is, a journey of 1,100 miles will be performed with only one night's travel by land, in five days and sixteen hours.

There is no doubt but the Miami canal, the Erie and Wabash canal, and the Chicago and Illinois sloop canal, or a railroad, will all be completed by 1840; and then the produce of those fertile regions, through which those improvements are made, will flow into Lake Erie, on their way to the Atlantic cities. And if the business on the Erie canal is already so great

as to call for the necessity of doubling your locks east of Utica, what must it be in 1840, when the productions, not only of the northern part of Ohio, but of Indiana, Illinois, Missouri, and the whole of Michigan, will be on their way to the Atlantic? The fact is, the State of New York must, of necessity, extend and enlarge her system of internal improvements; and were she to commence immediately to encourage and aid in the construction of the New York and Erie railroad, and also one from Albany to Buffalo, and open a sloop navigation between the North river and the lakes, she could not have them completed before the increase of business from the western States would render them all productive and indispensable.

There is, also, another view of the subject, which our Legislature, I trust, will not lose sight of; and that is, the decided advantage Pennsylvania will have over New York at present, when she has completed her system of internal improvements, which are directed with a view of securing the trade through Lake Erie to Philadelphia. The difference between the distance from Cleveland to New York, and from Cleveland to Philadelphia, will be seen by the following table:

From Cleveland	*Miles.*
To Massilon, by canal - - - -	68
Pittsburgh, by railroad - - - -	108, 176
Johnstown, by canal - - - -	104, 280
Holidaysburgh, by railroad - - - -	37, 317
Columbia, by canal - - - -	172, 489
Philadelphia, by railroad - - - -	81, 570

From Philadelphia to *Erie* is estimated to be 440 miles by canals and railroads. From Erie to Cleve-

land 100, making the distance from Cleveland to Philadelphia by Erie 540 miles.

The distance from Cleveland to New York.	*Miles.*
To Buffalo, by steamboat - - - -	193
Albany, by canal - - - - -	363, 556
New York, by steamboat - - - -	145, 701

By examining the above tables you will find that Massilon, on the Ohio canal, is 268 miles, and Cleveland is 130 miles, nearer to Philadelphia than to New York. Philadelphia has not only the advantage in the distance, but in being able to reach Lake Erie some weeks earlier in the spring and later in the season, than the state of our canals and harbor of Buffalo will admit, on account of the ice. It is this view of the subject which constrains me to come to the conclusion that the construction of a railroad direct from New York to Lake Erie is indispensable, and must be made.

Should the New York and Erie railroad be finished, the distance from New York to the following important places on the above lines of communication, and on the western waters, may be seen in the following table:

By the Miami canal.

From New York	*Miles.*
To Portland - - - - - -	450
Cleveland - - - - - -	586
Maumee bay - - - - -	676
Cincinnati - - - - - -	941
Madison, Indiana - - - - -	1,030
Louisville, Kentucky - - - -	1,084
Mouth of the Wabash - - - -	1,328

By the Erie and Wabash canal, and Indiana and Illinois railroad.

	Miles.
To Lafayette - - - - - -	890
Mouth of Wabash - - - - -	1,250

	Miles.
To Nashville, Tennessee	1,600
Florence, Alabama	1,725
Mouth of Missouri	1,100
Jefferson City	1,237
Franklin	1,287
Mouth of Kansas	1,460
Fort Leavenworth	1,480
St. Louis	1,117
Illinois river	1,121
Des Moines river	1,261
Fort Armstrong	1,376
Fever river	1,418
Galena	1,426
Wisconsin	1,500
Prairie du Chien	1,502
St. Peters, or Fort Snelling	1,820
Falls of St. Anthony	1,830

By the Lakes, Chicago and Illinois sloop canal, and Illinois river.

	Miles.
Detroit	713
Mackinaw	938
Chicago	1,313
Mouth of Illinois	1,663

By Green Bay and Fox rivers.

To Green Bay	1,288
Mouth of the Wisconsin	1,618

Although I am much pleased to see and hear that, through the enterprise of our citizens, canals and railroads are constructing, or contemplated, from Baltimore and Washington to the Ohio, and from Charleston to the Mississippi, and other sections of the country, and which, no doubt, will prove a great benefit to the regions through which they pass, yet there are some routes which must, from their localities, take the general trade and travel of the west. From the inspection of the above table of distances, by the Erie and Wabash canal, you will perceive it has a great advantage over

every other route from New York to the Ohio and Mississippi. It is 81 miles nearer by it to the mouth of the Wabash than by the Miami canal; 168 miles nearer than by the Ohio canal; and 550 miles nearer the mouth of the Illinois and Mississippi river than by Chicago; and nearer even to Prairie du Chien, the mouth of the Wisconsin, than by Green Bay and the Northern Lakes. The trade, therefore, of the Upper Mississippi and the Missouri, and a portion of the Cumberland and Tennessee rivers, will be carried on principally through this channel, with the Atlantic cities. The Tennessee and Alabama cotton, destined for the factories in the interior of New York, can be conveyed to them in as short a distance as they can be carried to New Orleans; and no one can believe that, when this is the case, they will first be carried to New Orleans, and then round to New York by sea, and then sent into the interior of our State. The same may be said of the millions of pounds of lead that is annually made on the Upper Mississippi, and in the State of Missouri, which can be sent to New York in a less distance than it can be carried to New Orleans.

It is impossible, sir, for any one to calculate the immense trade which will, in a few years, be carried on between the Atlantic cities, especially New York and Philadelphia, and the far west. There was an increase of population between 1820 and 1830—

In Ohio, of - - - -	356,674
Indiana - - - -	194,404
Illinois - - - -	102,364
Michigan - - - -	22,364
	675,806

From the present unexampled emigration to these States, there will, no doubt, be an increase of at least 1,000,000 of souls in them between 1830 and 1840; and by 1850 these States and Missouri will number upwards of 5,000,000 inhabitants. Think of this, and that in *fifteen years* it will be sober reality.

You inquire, also, whether there are any physical or financial difficulties in constructing a railroad from the Mississippi, opposite the mouth of the Missouri, to connect with the New York and Erie railroad? As far as my knowledge of the country and information extends, there are no physical difficulties in the way; and I am of opinion that a railroad can be made from Jamestown, at the outlet of Chatauque lake, to the Missouri, without the necessity of any stationary power, and not to exceed 650 miles in length. The most direct route would be to keep on the height of land which divides the waters which run into the lake and Maumee and Wabash rivers, from those which run into the Ohio and White rivers. By this route, with a very small deviation, you might go by Indianapolis or Lafayette, and so direct to the mouth of the Missouri. The whole expense of this road would probably not exceed $10,000,000. I suppose such a great national work, of such obvious utility, and such immense advantage to the whole country, could meet with no financial difficulties in its construction. The only difficulty I can conjecture, is entirely of a different nature; and that is: Will the States of Pennsylvania, Ohio, Indiana, and Illinois grant a charter to a private company for the purpose? This is a question I am not able to determine; but

sure I am, it would be better for the public good if encouragement could be given to the new States to make this road on the same principles that they have undertaken to make the Miami, Erie, and Wabash and Chicago and Illinois canals, with a condition annexed, that the United States mails, stores for the army, &c., shall always be conveyed on them on certain specific terms.

The State of Indiana has granted charters for railroads from Lawrenceburgh and Madison to Indianapolis, and from that to Lafayette, and probably another will be granted from Lafayette to Michigan City, on Lake Michigan. And there probably will soon be a railroad from Louisville through Nashville, Tennessee; Tuscaloosa, Alabama, to New Orleans; and from New Orleans to Augusta, and thence continued through North Carolina and Virginia to Washington City. And from this place there can be no doubt we shall soon have a railroad to New York, and probably to Boston. The railroad from Charleston, South Carolina, to Memphis, on the Mississippi, is now in progress, and will certainly be completed, for it is one of the most important improvements that can be made between the Atlantic cities and the Mississippi river, and indispensable for the interests of the southern States.

Every improvement by canals and railroads, which has a tendency to facilitate the intercourse between the east and the west, the north and the south, of our republic, is of the utmost importance, both in a commercial and political point of view; for that moment you bring together, within a few days' journey, the

different and remote sections of our country, by internal improvements through every State in the Union, their commercial interests and relations will be so developed and interwoven and their mutual dependence upon each other so seen and felt, as to bind and cement them together by the strongest tie, that of self-interest. For whatever politicians may say with regard to different sectional interests, the practical farmers of the south and west, and manufacturers and merchants of the north and east, will see and feel that their true interests are, in reality, one and the same; and that any interruption of free and unrestricted intercourse with each other will equally operate to the injury of them individually, as well as to that of the whole body politic. This, I trust, will always lead the different States of this Union to such compromise and concessions, with regard to what they may conceive to be for their individual advantage, as will promote the best interest of the whole nation. And it is on this account especially that I take a deep interest in the internal improvements of our country.

With great respect,

Your obedient servant,

J. F. SCHERMERHORN.

S. B. Ruggles, Esq.,

New York.

CHAPTER IV.

Errors of emigrants. A healthy climate no less desirable than a fertile soil. Situations combining these two requisites. Latitude of the Wabash valley. Its numerous prairies one great cause of its advancement. Comparative importance of timber land and prairie. General treatment of stock and management of a stock farm. Rearing and exporting hogs, a source of great profit to the West. Stock cattle. Cultivation of the sugar beet. Profits of a single year sufficient to repay the cost and ordinary expenditure of a prairie farm.

The choice of a genial and salubrious climate, no less than a productive soil, are points of vast importance to the enterprising emigrant. And yet how often is the former disregarded, and the latter sought for with undue desire, in his anticipated change of residence. Allured, it may be, by the first appearance of some fertile region, he selects it as a home, and settles down to dream of golden harvests and approaching wealth. But how soon, alas, the bright delusion disappears, and he awakes to feel the sad conviction that no charm of situation, or increase of gain, can recompense for hours of suffering and enfeebled health! It is to errors of this nature that we must attribute many of those early disappointments which o'ercloud the prospects of the western settler, embitter a continuance in his new abode, or drive him back, despairing, to his native land.

And these, too, are errors which reflection might avoid. If, indeed, there is a period which demands the exercise of sober reason and discrimination, that surely must be one when the glad adventurer, animated with high hopes and brilliant expectation, is about to seek another and far distant home. This is the hour on whose decisions are suspended days, nay years, of comfort or of wretchedness. Here, then, let him pause, and look well to his footsteps. Let his

determination be adopted in full view of probable results, and followed with a zeal deserving of its object. Let him haste not on each mountain wave, in quest of some expected, and it may be dangerous, harbor. Let him start out rather with his chart and compass, conscious of the dangers that attend his way. In avoiding Scylla, may he steer not on Charybdis, but pursue his course in safety to the haven of his wishes.

Guided, then, by the experience of others, and acquainted with the geographical position of the various regions presented to his choice, the emigrant selects his future home. To no one can the rule apply with greater force, "avoid all extremes." Fertility of soil and a healthy climate are the objects of his search, but he must remember that neither should be sought for to the exclusion of the other. Avoiding equally the "far north," favorable, perhaps, to health, but affording scant subsistence, and the tempting countries of low, southern latitudes, with their scorching sun and pestilential exhalations, he will choose between these two extremes, a region which unites the charm of both.

That portion of our country which combines the greatest fertility of soil, with a salubrious climate, must undoubtedly be placed between the 43d and 38th degree of latitude, and comprises, west of the Alleghany mountains, the States of Ohio, Indiana, Illinois, and a large part of Missouri, together with the southern part of Michigan and the northern region of Kentucky. Occupying a central position between these latitudes, will be found the most productive counties of Indiana and Illinois, together with the valley of the Wabash. The same parallels of latitude, on different sides of the

Alleghany mountains, will give nearly the same climate, with an exception in favor of the *mildness* of the western situation. Thus the climate of Philadelphia, as agreeable, perhaps, as any in the eastern States, is found, with little variation, to exist in Lafayette.

Of the general health of this rich valley there can be but one opinion, and that greatly in its favor. Its peculiar diseases, if any, together with the mode of their prevention or removal, will be found within the pages of another chapter.

One great cause of the immediate growth of the Wabash valley is the number of prairies, prepared, as as it were, by nature for the plough. Thousands of acres can be found, even now, as well fitted for producing crops as the most highly manured and rolled lands of the old settlements. Such is its fertility that over 100 bushels of corn, 40 bushels of wheat, and 70 bushels of oats are easily raised upon a single acre. Some individuals have been cultivating upwards of 1,000 acres in grain, the whole of which is readily disposed of at the highest prices. Other tracts of similar extent are sowed in grass, and the hay sold at an immense profit in the southern markets.

The exportation of pork, which is followed to a great extent, is another source of income to the enterprising merchants of the Wabash valley.

The question of the comparative value of timberlands and prairie is decided, by important facts, in favor of the latter. The cost of a single acre of each will be the same, but the comparative expense of cultivation will be found as 1 to 3 in favor of the prairies. From $3 to $9 per acre, including the first cost, is an

ample allowance for the complete arrangement and cultivation of a prairie farm, while the sum of *twelve dollars per acre is the lowest price* for simply clearing timber-land, which is left for many years encumbered with unsightly stumps and roots. The soil of the prairies, too, is generally more productive than that of timber land. Portions of prairie, far remote from timber, can be easily supplied, by sowing the seed of the black walnut or locust. Four or five years are sufficient to produce a growth of timber suitable for fuel and other purposes. Sod fences, with a hedge of locust or the hawthorn, are found to be better and far neater than the ordinary ones, heretofore in use, while the recent improvements in ditching machines render their construction extremely cheap and easy. Many of these hedges are already found upon the prairies, and they will soon constitute the outer and division fences of extensive prairie farms. The surface of the prairies, from its smoothness, is admirably adapted for the successful operation of numerous labor saving machines of recent origin. By the use of the ditching machine, before mentioned, it is estimated that fences may be made upon the prairies at the astonishingly low price of *fifteen cents* per acre, while the ditch answers a most valuable purpose in draining moist lands. A more extended notice of this machine, and the results it must accomplish, will be given hereafter.

Another circumstance which renders a supply of timber less necessary for the prairies, exists in the inexhaustible coal formations, at no great distance from them. Such, at least, is the situation of the prairies contiguous to Lafayette, some of which are crossed for

miles by the railroad from Lafayette to Danville, where coal of the best quality is found in great abundance.

Previous to a more detailed account of the actual cost of cultivation, yield of different crops, &c., we furnish our readers with a letter from the honorable O. H. Smith, Senator in Congress from the State of Indiana, giving an account of his success in farming operations. It was written in answer to inquiries from the honorable H. L. Ellsworth, Commissioner of Patents, whose laudable and unwearied exertions in the cause of scientific agriculture are well known throughout the Union. Independent of the replies to many questions of importance, this letter will be found to contain much general information.

WASHINGTON CITY,
April 23, 1838.

SIR: Your letter of this day has been received. I trust I need not say to you, that I am fully apprized of your very laudable exertions to aid the agricultural interest of the nation, and especially that of the State of Indiana, for which you have my sincere thanks. Regretting that I am not so intimately acquainted with the entire subject as to enable me to furnish you with all the information desired, I will briefly give you such views applicable to Indiana, as your interrogatories seem to suggest.

1. "Can non-residents improve their lands to advantage?"

2. "What terms would be fair and satisfactory?"

These questions depend so much upon the quality of land, and the manner and kind of the improvement desired, that it is very difficult to give a satisfactory answer

to them. I have no doubt but that non-residents can improve their lands to advantage, and it is very desirable to the State that they should do so. By this, I mean ordinary and valuable improvements, such as fencing, seeding with grass, breaking up prairie lands, and deadening and fencing woodlands, and clearing them by degrees. By making these and like improvements, the value of the lands would at once be enhanced in value, to double the first cost of the improvement made, besides, in a very short time, paying for all such improvements by the produce and pasture afforded from them. Such improvements can be made advantageously, either by leasing the land for a term of years, or by contract by the acre.

3. "What stock is most profitable—cattle, hogs, or horses?"

The answer to this interrogatory must also depend upon the kind of land, the state of its improvement at the time the stock is put upon it, and the ability of the proprietor to await returns of funds invested in stock.

If the lands are suitable for grazing, cattle would be the most valuable stock, commencing with young cattle, and disposing of them at four years old. The average improvement on this kind of stock, with proper attention, will be about fifty per cent. per annum. If the lands are good corn lands, hogs are the preferable stock, owing to the rapidity of their growth, and the quick return of the money invested, as a hog of the best stock comes to maturity, or nearly so, at two years old, while other stock must be kept to a much greater age before it can be advantageously disposed of.

As to horses, it may be remarked, that the raising of this stock can only be profitably carried on with great attention and much personal care, while the amount invested, and the length of time necessary to bring the stock to maturity, seem to forbid the idea that this investment can be advantageously pursued by non-residents, or even residents, on a large scale. Indeed, it may be remarked that horses can only become a profitable stock, when distributed in small numbers amongst the farmers of the country, who can break and train them, upon which much of their value depends.

4. "What has been your general treatment of stock, and, particularly, how have you fattened your swine?"

I have been for some years past engaged in farming and grazing to some considerable extent, though not so extensively as have many others in the section of Indiana in which I reside, but, owing to my public duties, I have not been able to devote so much of my time to the business as would have been desirable, to produce the most favorable result. I have confined my grazing to young cattle, and to prairie lands in a state of nature, except being fenced. The result has been about as I have stated in answer to a former interrogatory in relation to the advance on this kind of stock. I would here remark, that the northern part of Indiana is peculiarly adapted to grazing; producing herd, timothy, and blue grass, of a rapid and luxuriant growth. The marshes, or, as they are commonly called, the wet prairies, produce a wild grass, of coarse texture, from three to six feet high. Cattle live very well on this grass through the summer, and winter tolerably well upon the hay made from it; but it is very desirable to persons who

have that kind of land, and who may design grazing it, to get the tame grasses, (herd, timothy, or blue grass,) or all of these, set as soon as possible. The herd is most suitable for wet lands; timothy for dry open lands, and blue grass, or orchard grass, for open wood lands. You cannot rely upon the wild grass; and as it is very easy to set these lands with tame grass at a small expense, that improvement should not be neglected, where the lands are intended to be used for grazing purposes.

The next branch of your inquiry, in relation to the raising and feeding of hogs or swine, has received more of my personal attention than that of grazing cattle or of raising horses. Living in the centre of the White Water valley, where the great and almost the exclusive produce for exportation has been pork, my attention has necessarily been more directed to that subject than the others named.

The lands, that we call first rate corn-lands, are generally alluvial bottom lands, or walnut or burr oak table-lands. These lands, properly cultivated, produce about the average of sixty-five bushels of corn to the acre; some of the very best, produce eighty bushels to the acre, and are cultivated for successive years in corn. A statement of my own operations, for a few years past, will partially illustrate the process adopted in that part of Indiana in which I reside, in the pork business. I have had in cultivation in corn, for several years past, 160 acres of river bottom lands. The most of these lands have been in cultivation in corn about fifteen years, without intermission and without manure. The average crop has been, since I have tilled them, about 65 bushels of corn to the acre. I plant my corn, generally, about the first of

May; it is laid by about the middle of July, and by the middle of September it is sufficiently hard to commence the feeding of my hogs. At this time, I purchase of those who raise them, the stock required to eat off my corn; say about three and half hogs to the acre, which is about the proper number to eat an acre of corn in thirteen weeks, the usual time allowed to make our pork from ordinary stock hogs. My course of feeding is this: My fields contain from 20 to 30 acres each, all well watered. At the proper season, I turn my hogs into a field, and after it is eaten off clean, I pass them into another, and so on, until I have fed off my crop, when my hogs are ready for market. The profits of the operation depend much upon the price and quality of the stock, and the price pork may bear in the market. But, for several years past, it has been an excellent agricultural business. When I first commenced feeding this kind of stock, a few years ago, I very naturally supposed that, by turning them into the field of ungathered corn, great waste would be the inevitable consequence, and I had my corn pulled and fed to them in a dry lot. But I soon became satisfied, by inspecting the operations of my neighbors, who had been for years in the business, that my labor and expense of feeding in this manner was entirely thrown away, and I abandoned it. Hogs gather corn in the field with little or no waste, provided the fields or lots in which they are fed are proportioned in size to the number of hogs fed upon them, which should be in the proportion of 100 hogs to five or six acres of corn. The hogs should be regularly salted while feeding, and running water should be accessible at all times to them.

By feeding in this way, I find that my hogs improve more rapidly, and my lands increase in value yearly, although I have never put a shovel-full of manure upon them. This may be accounted for by the fact that the stalks, husks, &c., are brought down to rot upon the lands through the winter, to be ploughed under in the spring; and so the process goes on year after year, the land receiving again the most of all that is raised upon it. Before I leave the subject of feeding swine, I would suggest that very much of the success depends upon the *breed of the animal*, as well as *the manner of his feeding when young*. There is one simple fact that should never be lost sight of by the feeder or raiser of this stock, and that is: *that if you once put a hog upon high feed, you should never diminish it*, or the animal will scarcely ever regain his former healthful and improving condition; or, in other words, when you commence the fattening process, you should continue it till the animal is killed. Whoever may test the correctness of this position, will find it to be fully sustained.

Being much from home, and not having a disposable force to tend or farm my land, I have for years paid $\$3\frac{1}{2}$ per acre for tending it, the persons farming the corn being at all the expenses. This is about a fair compensation for such services.

I have thus briefly answered the substance of the questions suggested in your letter, and have only to regret that my attention has not heretofore been more specially directed to some of the subjects you suggest for my consideration; as, in that event, it would have

been in my power to have given a much more satisfactory response to your letter.

Respectfully,

O. H. SMITH.

H. L. Ellsworth, Esq.

The great profits of stock-farming will be readily perceived. Corn, as will appear from Mr. Smith's experience, can be raised and delivered on the stalk, at *five cents* per bushel; since his actual cost for 65 bushels, (an average crop per acre,) for several years, was but three dollars and fifty cents. Hogs fed thus in field, require no additional expenditures, except the sum required for salting. Such has been the experience of other individuals, some of whom have fattened for the market, yearly, upwards of 1,000 hogs. The great demand for pork, existing in the southern markets, together with the immense profits that attend its sale, are too well known to need a further mention. The pork business, in its various branches, has furnished the commencement and completion of many of those splendid fortunes, which are found in the large cities of the western world.

Others have devoted their attention to rearing fine stock cattle, and with great success. Stock of this description can be kept fat on the prairie pastures during summer, and will live well on blue grass fields throughout the winter. It is better, however, to provide fodder, and allow them shelter. Selections of cattle and other stock, as breeds, can be made to great advantage from the rare collections to be found in portions of Ohio and Kentucky. The profit on 500 heifers, at $5, (the average cost,) is readily perceived. Working oxen, of large size, which can be easily procured in the vicinity of Lafay-

ette at $50, will bring in Michigan from $100 to $125 per yoke; and large numbers have, during the past year, been driven thither from the valley of the Wabash. The cost of driving oxen to an eastern market will not exceed $5 per head, or they may be sent in flat-boats to the southern States, at an expense but trifling, when compared with the returns.

Beet sugar manufacture, offers another advantageous mode for the investment of capital. From 18 to 20 tons of sugar beets are calculated as the product of an acre. This, allowing 8 per cent. of sugar, gives 3,200 pounds, which, estimated at 10 cents per pound, will give $320 to the acre. The residue of beets, after an extraction of the saccarine matter, is much used in England for the manufacture of fine paper. The cultivation of the beet, with reference to sugar, is an employment well adapted, on a small scale, to private families. Much of the labor requisite, can be performed in-doors, and will furnish an agreeable occupation for long winter evenings. Would it not literally tend to "sweeten life," to raise a few barrels of choice sugar from a "garden patch?" This is done with much success in France, where labor is high, and the rent of land at eight, ten, and twelve dollars to the acre.

These are a few of the agricultural operations which are sources of immediate income to the western settler, and which are calculated to induce an extensive cultivation of his lands. It may be assumed, as the result of long experience, that the profits of the *first* year will repay the whole costs and ordinary expenditures upon a farm of from 320 to 1,000 acres, besides leaving the land cultivated, as well as that adjacent, increased several hundred per cent. in its capabilities and value.

CHAPTER V.

Vast agricultural importance of the Wabash and Maumee valleys. Baden corn, Italian wheat, &c. Cost of improving 640 acres. Cost of improving 320 acres. Ditching machines. Hedge fences. Plan of a neat and comfortable "prairie cottage," for the settler. Raymond's shingle-cutting machine. Tenoning and mortising machines. Estimate of the cost of cultivation and products of 320 acres in flax. Estimate of the cost of cultivation and products of 640 acres in wheat. Estimate of the cost of cultivation and products of 640 acres in grass.

The vast agricultural importance, not only of the Wabash but the Maumee valley, with their facilities of exportation by the great canal, will appear from an estimate of the products they could anually render. Their whole distance may extend 500 miles. A cultivation on both sides of their rivers, of 20 miles in breadth, would give upwards of 336,000,000 bushels of wheat, allowing only 20 bushels to the acre, and 672,000,000 bushels of corn, at 40 bushels to the acre, and this, too, upon a calculation which sinks about one-half the ordinary product of these articles. How much would the value of this product be increased by the hydraulic powers derived from the canal alone, in the further preparation of the same for market!

What exports could be made, from only 20 miles square, around the town of Lafayette! The cultivation of this quantity of land, (256,000 acres,) in wheat, would give 6,400,000 bushels, allowing 25 bushels to the acre: equal to 1,300,000 barrels of flour, which ought to be transported, via New Orleans, to the city of New York, at from $1 25 to $1 50 for each barrel.

If cultivated in flax, an article admirably suited to the soil, it would give, allowing only 12 bushels to

the acre, 3,072,000 bushels, worth at least $1 per bushel, is - - - -	$3,072,000
Add 256,000 tons of stem, which, at $12 per ton, is - - - -	3,072,000
Amounting to	$6,144,000

This seed manufactured into oil, allowing 7 quarts per bushel, would yield 5,376,000 gallons. The stem would yield about 146,286,000 pounds of dressed flax, which, at 8 cts. per pound, would amount to $11,702,880.

Again, if these 256,000 acres were sowed in grass, they would yield, at the rate of two tons to the acre, 512,000 tons, which, at $20 per ton, (the lowest price at New Orleans for many years,) would amount to $10,240,000.

These estimates are startling, it is true, and yet they are but the extensions of actual results upon a smaller scale. Indeed, in almost every instance, the yield and price of the article as given falls short of the reality.

How much can be done for the improvement of the Wabash valley, by the introduction of the better kinds of grain and grasses. In the calculations made in the letter from the Hon. O. H. Smith, 65 bushels of corn are allowed as a good growth per acre, and the still smaller amount of 40 bushels forms the basis of the calculation given at the commencement of this chapter. But the writer recollects at least one instance, where the introduction of "the Baden corn" (a species distinguished for its great yield, and for a more particular description of which our readers are referred to the appendix) was followed by the astonishing return of 110 bushels to the acre, and an average of four ears to the stalk, *as the*

first crop from the sod. A detail of the experiments of Mr. Baden, by whom this corn was brought to its present state of perfection, is worthy of great attention. It exhibits how much can be accomplished for the improvement of the most ordinary grain, by unceasing perseverance for a course of years.

By a letter from the honorable John R. Porter, of Eugene, Vermillion county, to the honorable H. L. Ellsworth, of Washington city, further information will be given of this celebrated corn, together with many valuable hints on farming operations. The letter is dated June 22, 1838. The extracts are as follows:

* * * * * *

"We have had a remarkable and productive season. Every thing seems to have conspired to reward the efforts of the husbandman. The earth literally labored to perfect her fruits. Could we always have such seasons, or by any process acclimate the 'Baden corn,' your introduction of it, will add more to the State than one-half her works of internal improvement, so splendidly projected. An increase, with the same labor, of 15 bushels to the acre, would be immense, and I am confident mine *was more than fifty bushels!* It was planted on the 13th of May, with only ordinary preparation, and at the first, (when most needed,) received less than ordinary care, but was '*laid by*,' as we term it. Still it produced 120 bushels to an acre, and this on 'Wabash poor land,' which had supported twelve successive exhausting crops without manure, and with nothing but a superabundance of *fertilizing* weeds for the next crop. I intend an experiment, by selecting my seed from the foot of the ear, and experience shows

that it will be two weeks earlier in ripening. Something must be done to adapt this fine corn to our seasons.

"The Italian wheat, I put in also late, and it succeeded admirably, and in its growth showed perfect maturity, but when threshed exhibited a shrunken grain. I charged this to lateness in sowing; for common spring wheat, sowed early, formed a perfect kernel. Our millers complain of the flintiness and difficulty of flouring, which attends the Italian wheat; but they must improve with our improvements.

"I have a plan in view, and I wish to submit it to you for maturity and execution: and that is, to introduce the mowing and grain-cutting machine into this State. Would it not be profitable for the proprietor to try the experiment upon the Wabash? Let two or more be sent, one for Lafayette, another for this place, with a competent and skilful manager, to cut grass and grain by the acre. I will, of my own land, promise 300 acres. You can furnish as much more, and my neighbors will offer full 1,000 acres, if they have confidence in the machine. I know of no way of making so much money. Will you present the subject to the consideration of the proprietor, and confer with your son at Lafayette upon its feasibility?

"But I will introduce to you my multiplied wants. If you send to your son any grains, I wish half a bushel of 'Siberian wheat,' and a like amount of 'Dutton corn.' These I wish for the purpose of experiment. Baden corn, I *know* I can perfect in two years, and with a yield of never less than 100 bushels to the acre. I also wish half a bushel of the earliest and best spring barley, double rowed, if it can be procured.

I find barley a most profitable crop. Our brewers are much in earnest, and I am satisfied you will find it for your interest to send some of the seed referred to. I also wish a few of the finer grass seeds. Our grand prairie (contiguous to Lafayette) is naturally designed for such productions. If I lived on it, never would I rest until they were growing around me.

"Ever yours,

"JOHN R. PORTER.

"Hon. H. L. Ellsworth,

"*Washington City, D. C.*"

Such are the opinions of Judge Porter, one of the most distinguished friends of agriculture; and, we may add, one of the most sound, scientific, and successful farmers that the State contains. They are the offspring of no wild and visionary speculation, but the results of much experience and cool reflection. They are opinions, too, that are sustained by the testimony of many others, who, following with equal zeal the same grand objects, have arrived at similar conclusions. It is, indeed, fortunate for the young and fertile State of Indiana, that she has within her borders those whose extended views are thus directed to her most important interests, and whose means allow a full indulgence in their favorite pursuits.

And much more remains demanding effort on the part of the scientific agriculturist, but they will be efforts meeting with a vast reward. Who can calculate the operation of a perfect system of cultivation on the fertile timber lands and prairies of the Wabash valley; the increased returns they might be made to render, and the constantly accumulating value of land

itself? Who could deny to choice and cultivated portions of the west, a price equal to that claimed for the long tilled and less productive farms of the eastern States?

It will, doubtless, be expected by our readers, that we should furnish a concise detail of the whole expense required for the preparation of a farm for actual cultivation. This we propose to do. Our calculations will be made with reference to the prairies, but will answer equally for timber land, by allowing from $10 to $12 more per acre, the sum requisite to clear the latter. Of the accuracy of the following estimates there can be no doubt, as their correctness is a subject of almost every day's experience. They were prepared by a late and lamented brother of the writer, who had just finished a prairie farm containing 800 acres, and are as follows: "The expense of breaking up the sod is $2 25 per acre. This is a *fixed price*, and certain calculations may be made upon it wherever the land may be located. But a difference will exist in the cost of fencing, according to the distance the rails are carted. For the farm that I have just fenced, the rails were hauled four miles. *This distance will form the basis of my calculations.* It is apparent that the cost of fencing will depend materially on the size and form of the area to be enclosed. An area of 320 acres will cost much more than half the amount required to fence 640 acres. The four sides of a half section are three miles; the two longest sides being one mile each, and the two shortest a half a mile each. The four sides of a whole section (640 acres) are four

miles, requiring *only one-quarter more fence* for *double* the quantity of land.

Twenty rails are allowed to a rod; this makes a "Virginia" or "worm fence," eight rails high. The eighth rail, called a rider, is elevated twelve or eighteen inches from the seventh rail, and rests on crotches eight feet long, crossing at each corner of the "worm." Rails of ordinary size, laid in this manner, make a durable and light fence, over and through which no cattle or stock can pass.

Estimate for improving 640 *acres.*

Four miles, or 1,280 rods, at 20 rails to the rod, gives 25,600 rails. Adding, for enclosures, cribs, &c., 1,400 rails, total of rails is 27,000, which, at $3 50 per hundred, is	$945 00
For one log-house, well, and laying up fence	200 00
For breaking up 600 acres, allowing the remaining 40 for bad spots, enclosures, &c., at $2 25 per acre	1,350 00
Allow for contingencies	30 00
Amount	$2,525 00

Making not quite $4 per acre cost, including buildings, &c.

Estimate for 320 *acres.*

Three miles, or 960 rods, at 20 rails per rod, gives 19,200 rails. Adding, for enclosures, cribs, &c., 1,300, total of rails is 21,500, at $3 50 per hundred, is	$752 50
For well, laying up fence, and one house	175 00
For breaking up 300 acres, (allowing the remaining 20 for enclosures, &c.,) at $2 25 per acre	675 00
Add for contingencies	25 00
Amount	$1,627 50

Making near $5 per acre.

The above calculations may vary a few cents per acre, owing to slight fluctuations in the price of laborers. One hundred acres will cost about $6 50 per acre, with the same buildings, &c., and eighty acres will cost about $8 30 per acre—the expense per acre increasing as the number of acres is diminished. It is found, in general, that the first two crops will pay for the land at Government prices, fence the same and plough it, and on 320 acres build a house worth $200. The land will sell readily, if improved, at $10 per acre."

To the estimates given above should be added the original cost of the land per acre; when the whole amount will be as follows:

First Estimate.

For the improvements on 640 acres, as described -	$2,525 00
Cost of land, at $1 25 per acre - - - -	800 00
Amount - - - - -	$3,325 00

Second Estimate.

For the improvements on 320 acres - - -	$1,627 50
Cost of land, at $1 25 per acre - - - -	400 00
	$2,027 50

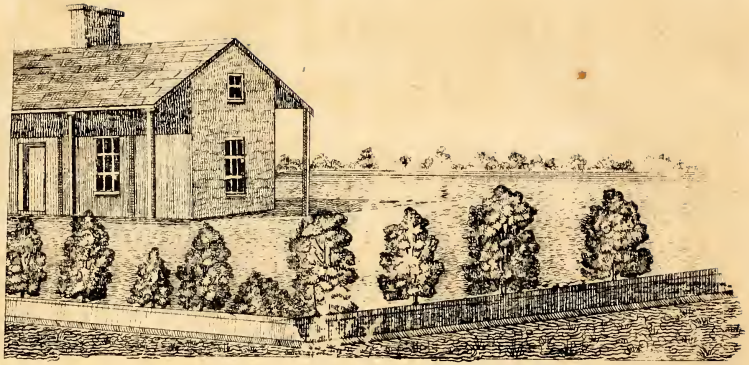
This will be found as accurate an account as can be given of improvements, upon the *ordinary modes* adopted in the western country. *The introduction of ditching machines, and the substitution of hedge fences*, for those now in use, will greatly lessen one large item of expense. By the use of these machines, it is supposed hedge fences may be made at the astonishingly low price of *fifteen cents per acre!* Assuming, however, 25 cents as the price per acre, we shall

reduce $945 00, (the sum allowed for rails by the first estimate,) to $160, and save from the whole amount the sum of $785! This, too, by the introduction and use of a machine which gives, in addition to the fence, a permanent and valuable drain for moist lands. The appearance of a well cultivated prairie farm, surrounded and intersected by these fences, whose tops are covered with a luxuriant growth of the wild locust, hawthorn, or Osage orange, can be easily imagined. The necessity of procuring timber, except for fuel, is removed, and much labor and expense in hauling is avoided.

The poor and uncomfortable appearance of many of the houses so often met with on the most productive farms throughout the western country, is a subject of extreme regret. The practice of erecting rude log cabins, (derived at first from a scarcity of the material, suitable for better dwellings,) has been much too long continued. Tenements of this description prove often detrimental to the health and comfort of their inmates, while their value as improvements is too small to mention.

At considerable expense of time and labor, we have prepared a plan (which accompanies this volume) of a house or "Prairie cottage" for the western settler. The utmost economy has been studied in this plan, and the dwelling will be found simple in structure, convenient, and, considering its durability, *extremely cheap.*

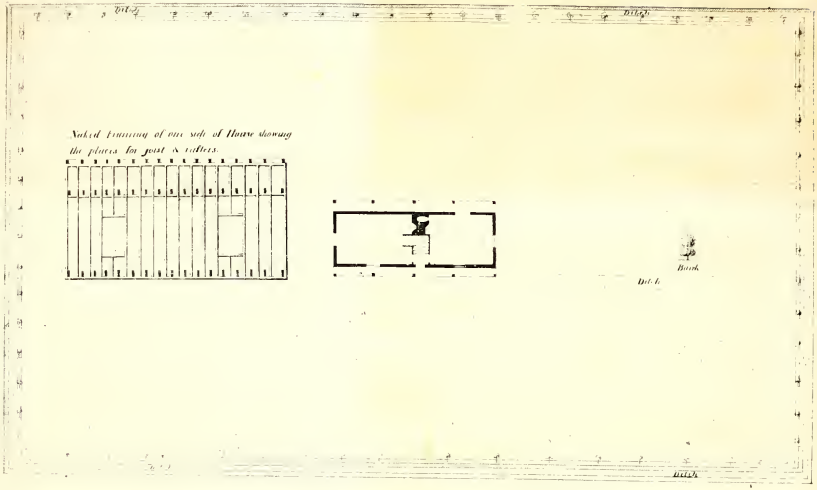
An upper division of the plan, to which reference is had, represents a house of the description we propose, situated in a convenient portion of a "lot" or tract of 80 acres. A sod fence encloses the area.

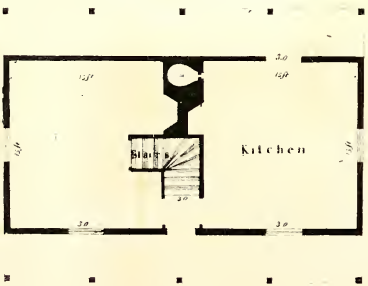

Ditch

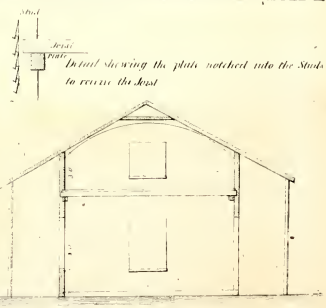
A second division of the plan, exhibits a naked frame of one side of the house, with places for the joists and rafters.

A third division, contains a plan of the lower story, with two fire-places, situation of oven, &c., together with a detail showing the plate notched into the studs to receive the joists. A representation of the bank or sod fence, with its angle of inclination, is also presented.

Upon the plan proposed, no large timbers are required. The studs are the only uprights, and are allowed to be twelve feet long. The lower story, which embraces an area of 34 by 16 feet, is divided into two rooms, each containing 15 feet square. This story is eight feet high, at which elevation a piece of scantling is framed into the studs, for the joists of the second floor to rest upon. The second story is also divided into two rooms, the upper walls of which are formed by the inclination of the roof from the ridge to the top of the uprights. The rafters extend six feet beyond the plate, and rest upon plain cedar, or other posts of suitable material, forming in this manner a convenient porch. Boards unplaned are nailed to the studs in the same manner that clapboards are attached. The floors are made of oak plank, and left to wear smooth, as is common in the country. The windows are of small glass, (8 by 10 or 7 by 9 inches,) so that they may be easily repaired in case of accident. The doors are "batton doors," hung with butts or hinges. The two lower rooms may be plastered or ceiled up. If the latter method is adopted, the boards should be planed, and the interstices filled with a mixture of straw and clay, to exclude both the heat of summer, and the cold of winter.







Bank and Ditch for enclosures Angle 30° Sodden

A second division of the plan, exhibits a naked frame of one side of the house, with places for the joists and rafters.

A third division, contains a plan of the lower story, with two fire-places, situation of oven, &c., together with a detail showing the plate notched into the studs to receive the joists. A representation of the bank or sod fence, with its angle of inclination, is also presented.

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Six batton doors are allowed throughout the house, and are thirty inches wide, except that furnishing the main entrance to the dwelling, which should be three feet in width.

The following calculation, exhibits the quantity of lumber that will be required for each house:

Estimate of lumber.

	Feet.	
Corner pieces, (7 x 4 inches) -	112	
Studs, (3 x 4 inches) -	1,080	
Six plates, (6 x 4 inches) -	360	
Shingling laths, (3 x 1 inches) -	210	
Joist, (10 x 3 inches) -	1,920	
Floor boards - - - -	900	
Weather boarding - - -	1,300	
Number of feet - -	5,882	Superficial measure.
Amount of plastering - - -	313	Square yards.
Shingles for roof - - -	6,720	
Bricks - - - - -	2,500	

The whole cost of a house, containing the above materials, will not exceed $200.

How much more commodious, and yet not more expensive, is a house of this description, than the neatest hewn log tenement, and how far superior to the ordinary cabin.

In addition to other improvements, a well should be dug, which can generally be accomplished by an excavation of from fifteen to twenty feet. Where stones for walling up the well cannot be found, clay suitable for bricks is easily procured.

Some may prefer to cover the whole exterior (both sides and roof) with shingles. In this case about

9,000 shingles more would be required, than the number given in the estimate of lumber. And here we cannot omit to mention a late valuable invention, by Joseph S. Raymond, of Lodi, New York, for cutting shingles with revolving knives. The machinery is simple,—(cost about $100,) and cuts from *twenty to twenty-five thousand shingles daily.* This may appear incredible, but astonishment will be lessened when the reader is informed that the shingle blocks are steamed, and presented to the knife while the timber is still soft. The wheel revolves with great rapidity, and ordinary knots form not the slightest obstacle. How easily could proprietors cover their cottages with a neat article prepared by this machine, and shaved so smooth as to admit the laying on of paint with accuracy. This discovery is secured by letters patent, and will soon be introduced throughout the country.

By the use of Fay's tenoning machine,—another late and valuable invention,—one man can tenon all the studs for ten such houses as the "prairie cottage" daily, besides preparing these same studs for the plates to receive the joists. This expeditious method is as follows: The studs are sawed twelve feet long. The moment one end is presented to the machine, the tenon is made, and the other end despatched immediately. A cylindrical saw excavates a small "gain," eight feet from the bottom of the studs. With four sills obtained from the woods, and the necessary plates mortised by the above machine, the framing is done; if we except bevelling the rafters.

If these labor-saving machines are employed, and the whole frame completed at the mill, it can generally

be floated or carted to the place selected, and set up in a few days.

The exterior of the prairie cottage, thus constructed, should be covered with a coat of whitewash; this will add much to its neatness of appearance, and preserve the timber from decay. The labor of a few leisure hours, employed in planting vines and evergreens to twine around the pillars which support the porch, or in placing at proper intervals a few fine fruit trees on the land adjacent to the house, would meet an ample recompense.

The further sum of $100, expended, in addition to the erection of the cottage, in the excavation of a well, and in ditching, for exterior and division fences, would increase the value of a half section or three hundred and twenty acres, to $1,500 or $2,000.

These improvements will enable the proprietor to sell or rent his lands on favorable terms. As soon as the canal is open to Lake Erie, settlers will rush into the Wabash valley, and people that productive region with extreme rapidity. Much of the fine land of that valley will bring in a few years from $15 to $20 per acre.

Those who have resided hitherto in wood-lands, amidst stumps and roots, will soon realize the value of thoroughly cleared land, and seek with avidity the choice prairie farm, divided by ditches and embankments into suitable fields ready for the plough, and possessing the advantage of a comfortable cottage.

To the estimates given in a preceding portion of this chapter of the cost of improvement by the ordinary methods, we annex others, showing the cost of *actual cultivation,* and improvements, with the prairie cottage and hedge fence.

It should be recollected by our readers, that the following estimates are made for the *first year* only. The profits, therefore, are those that remain *after paying for the farm.* It will be seen that the sum of $1,440 is allowed for "breaking up the sod" upon 640 acres; but all, after ploughing, will cost less than one-quarter of this amount.

In the calculation made of the expense and income of raising hay for southern exportation, the reader will discover that no allowance has been made for seed; but he will also perceive that we have omitted the profit derivable from the land as pasture, when the grass has been cut off. Nor have we noticed the plan pursued by many of rolling or harrowing in the seed without a previous ploughing. Of the success of these modes, after the compact sod of the prairies has once been broken, there can be little doubt, while the expense they save is easily imagined.

In the estimate given of the wheat crop, we have also omitted the profits of the straw upon the land, which is accounted in the eastern States of so much value.

The sums allowed for mowing and for pulling flax may appear too small to many; they are, however, *ample* if machines are used, which will be described in the two succeeding chapters.

By a careful examination of the various items, our readers will discover that the expenditures of the *second year* will be lessened in each estimate more than $2,000.

Estimate of cultivation, and the products of six hundred and forty acres in flax:

Six hundred and forty acres in account with the cultivator.

	Dr.
To 640 acres of land, at $1 25 per acre - -	$800 00
To ditching and fencing the same, at 25 cents per acre	160 00
To house, like plan - - - - -	200 00
To well - - - - - - -	25 00
To breaking up 640 acres, at $2 25 per acre - -	1,440 00
To 640 bushels of seed, at $1 per bushel - -	640 00
To harrowing ground and sowing seed, at 60 cents per acre - - - - - - - -	384 00
To pulling flax, at 50 cents per acre - - -	320 00
To threshing seed and stacking flax - - -	300 00
To delivering stem at flax mill, at $1 per ton, (640 tons,) is - - - - - - -	640 00
Amount - - -	$4,909 00

	Cr.
By 7,680 bushels (12 bushels to the acre) of seed, at $1, is - - - - - - - -	$7,680 00
By 640 tons of stem, at $12 per ton, is - - -	7,680 00
Amount - - -	$15,360 00
Income, as before - - - - - -	$15,360 00
Deduct expenses - - - - - -	4,909 00
Profit - - -	$10,451 00

Allowing even one-half of the apparent profit for contingencies; what now is the value of the farm?

Estimate of six hundred and forty acres in wheat:

Six hundred and forty acres in account with the cultivator.

	Dr.
To 640 acres of land, at $1 25 per acre - -	$800 00
To ditching and fencing the same, at 25 cents per acre	160 00
To house, like plan - - - - -	200 00
To well - - - - - - -	25 00

To breaking up 640 acres, at $2 25 per acre - -	$1,440 00
To 960 bushels of seed, at 75 cents - - -	720 00
To harrowing and sowing, at 60 cents per acre -	384 00
To cutting wheat, (with Hussey's machine,) at 25 cents per acre - - - - - -	160 00
To stacking wheat - - - - -	125 00
To threshing 16,000 bushels - - - -	500 00
Amount - - -	$4,514 00

	Cr.
By 16,000 bushels of wheat, (25 bushels to the acre,) at 75 cents per bushel - - - - -	$12,000 00

Income, as before - - - - -	$12,000 00
Deduct expenditures - - - - -	4,514 00
Profit - - -	$7,486 00

Estimate of six hundred and forty acres in grass:

Six hundred and forty acres in account with the cultivator.

	Dr.
To 640 acres of land, at $1 25 per acre - -	$800 00
To ditching and fencing the same, at 25 cents per acre	160 00
To house, like plan - - - - - -	200 00
To well - - - - - - - -	25 00
To breaking up 640 acres, at $2 25 per acre - -	1,440 00
To harrowing and sowing seed, at 60 cents per acre -	384 00
To mowing, making, and pressing 1,280 tons, at $2 50 per ton - - - - - - -	3,200 00
To freight on 1,280 tons to New Orleans, at $8 per ton	10,240 00
Amount - - -	$16,449 00

	Cr.
By sale of 1,280 tons, at $25, (average price at New Orleans,) is - - - - - -	$32,000 00

Income, as before - - - - -	$32,000 00
Deduct for expenditure - - - - -	16,449 00
Profit - - -	$15,551 00

The estimate of two tons to the acre may be thought too large. If so, one ton and a half can be assumed as the basis of calculation. It is true, however, that no small portion of choice land along the Wabash will produce *upwards* of two tons to the acre.

It is found that the profit derived from the different products enumerated, stands as follows:

	Profits.
Six hundred and forty acres in flax - - -	$10,471 00
Six hundred and forty acres in wheat - - -	7,486 00
Six hundred and forty acres in grass - - -	15,551 00

The estimates of profits, astonishing as they may appear, are nevertheless the *actual results* that would attend the *successful* cultivation of a farm one year. The further amount of profits to be derived on hay and flax will be detailed under their appropriate heads hereafter.

Even sinking the whole estimates as given full one-half, who does not perceive that the results are still most striking?

Considerable scepticism has hitherto prevailed throughout this country on the subject of *ditching*, and the substitution of sod embankments for the fences now in general use. This feeling has, undoubtedly, arisen from repeated failures to attain the benefits proposed by these important methods of draining and enclosing land. These disappointments, however, occurring, it is believed, in every instance,

from ignorance of the *proper modes of operation*, will, in future, disappear before the aid of valuable machines recently constructed to attain the ends desired, together with a more extended knowledge of the subject.

In Europe, even in the cold regions of Norway, ditches and embankments answer a most valuable purpose. In England they are found practicable and highly ornamental. Why, then, are they not adapted to our western prairies? Not surely from their climate, which is comparatively mild, or from any defect in the soil; since the universal result of experiment would lead us to select the latter as the one adapted, from its nature, to their safe construction.

One great error arises from the fact that the angle of the ditch is often *too acute* for sodding. The slope, if not too steep, can be seeded down with blue grass, or a turf may be applied directly at a small expense. Should the latter method be adopted, we recommend ploughing several furrows of turf, two or three inches deep, which can be divided at the length required, by means of a roller, containing knives placed at proper intervals on its circumference, at right angles with the periphery. Turf thus prepared can be applied to the embankment with rapidity, and several hundred rods could be sodded daily by a single hand.

Such is deemed the importance of a good ditching machine, that numerous applicants, from various portions of the Union, are pressing their claims to patents for inventions of this nature. One individual alone, has deposited in the Patent Office, at Washington City, *eighteen models*, exhibiting different modes of

accomplishing the end proposed. Several machines of this description are succeeding fully. One of these, the invention of Mr. G. Page, has been recently exhibited in Baltimore and Washington, and is being introduced, by purchase, into several of the States. So powerful is its operation, that it will excavate, at the rate of sixty feet per hour, a ditch three feet wide at top, and three feet deep; at the same time laying the embankment on one side in a handsome manner. This labor is accomplished by a single horse, in aid of the machine.

When it is considered that all that is required in the construction of drains and fences of the kind described, is to excavate a few feet of dirt, and arrange the same for an embankment, it is, indeed, surprising that the genius of inventors has not heretofore accomplished an object, apparently so easy of attainment and productive in results.

CHAPTER VI.

Exportation of hay to the southern markets. Cost per acre of preparing it for market. Average yield per acre. Cost of transportation. Price at New Orleans. Estimate of costs and profits of one thousand acres seeded down with grass. Estimate of costs and profits of six hundred and forty acres. Hussey's mowing and reaping machine. Its great advantages.

The superior adaptedness of the soil of the southern States to cotton, the immense profit derived from the sale and exportation of that article, and a climate, on the whole, unfavorable to the growth of grasses, have created, in that portion of our country, a dependence

on the middle and northern States for hay. This article of merchandise already engrosses the whole attention of many enterprising men, who have secured, or are securing, through its means, handsome fortunes as the reward of a few years' exertion.

There are numerous advantages which attend a hay crop. If the crop is a small one, the price is proportionably high. If the market, on the other hand, is glutted, hay may be kept without injury for many years. The feed remaining after grass has been cut from the meadow, is highly prized; and graziers are willing to give $5 per ton for hay, to feed out on the farm. Allowing that the farmer gets but this small sum, he may, in addition to securing the manure upon the land, receive $7 (the interest of $116) profit from each acre.

We are confident, that those engaged in pressing hay, will find it advantageous to compress the bundles (of the weight of from four to five hundred pounds) into a compass of twenty-four and twenty-six square feet. Peter A. Van Burgen, Esq., of New York, in giving his experience upon this subject, remarks, that if a press and horse, together with hoops and nails are furnished, laborers will press the hay at sixty-two or seventy-five cents per ton, and board themselves. Three men will press from five to six tons daily.

By information derived from various sources, and more particularly from data politely furnished by Messrs. Dunn, Buel, Gregg, Hustis, and others, residing near Lawrenceburgh, Indiana, and practically acquainted with the business, we are enabled to present our readers with the following conclusions:

1. The quantity of hay shipped annually from

Lawrenceburgh to the southern markets varies from five to ten thousand tons.

2. The cost of mowing, stacking, and pressing hay is from $2 to $3 per ton.

3. The average product of the best land is two tons to the acre.

4. The kind of hay most in demand is timothy.

5. The value of pressed hay at Lawrenceburgh varies from $10 to $12. Mr. Buel sold two hundred tons for $11 at *the press.*

6. The cost of transportation, in arks, constructed for the purpose, *via* the Ohio and Mississippi rivers, to New Orleans, is $8 per ton.

7. The price of hay at New Orleans has ranged between $20 and $50 to the ton, and is seldom less than $25. This may be assumed as the ordinary price.

8. Hay-presses vary in cost, according to their size and power, from $60 to $100.

9. It is recommended to add a small quantity of red clover, (say two quarts to a bushel,) when sowing timothy, to prevent the land from "binding."

Nor can we omit to notice the great advantage of suffering timothy to remain uncut *until the seed is ripe.* By this delay the nutritious quality of the hay is increased one-third in value; while from ten to thirty bushels of seed are gained per acre. This seed can be separated from the stem with little disadvantage to the hay as fodder; certainly none that bears comparison with the profits on the seed, which, at fifteen bushels per acre, would amount to $30. The seed alone on 1,000 acres, would bring $30,000. This suggestion is

earnestly recommended to farmers in a late agricultural treatise by Fessenden.

From these conclusions, the results of actual and repeated experiments, we can easily estimate the immense profit to be derived from raising hay for southern exportation.

No finer grass land can be found, than that along the borders of the Wabash. Crops of two tons to the acre, could be raised with certainty, and arks constructed for the transportation of the hay, when pressed, to New Orleans. An estimate of the cost and cultivation of one thousand acres, would give the following result:

One thousand acres in account with the cultivator.

	Dr.
To 1,000 acres of land, at $1 25 per acre - -	$1,250 00
To breaking up the same, at $2 25 per acre - -	2,250 00
To ditching and fencing the same, at 15 cents per acre	150 00
To harrowing and sowing seed, at 60 cents per acre -	600 00
To mowing, raking, and pressing 2,000 tons of hay, at $2 50 per ton, is - - - - -	5,000 00
To expense of transportation on 2,000 tons to New Orleans, at $8 per ton - - - -	16,000 00
Amount - - -	$25,250 00

	Cr.
By sale of 2,000 tons of hay, at $25, (average price per ton,) is - - - - - -	$50,000 00
Income derived from sales, &c. - - -	$50,000 00
Expenditures - - - - - -	25,250 00
Profit - - -	$24,750 00

Again, calculating at the rate of only one ton to the acre, and the price of $20 to the ton, we shall have:

Cash received for 1,000 tons of hay, at $20 per ton, is	$20,000 00
Expenditures - - - - - -	14,750 00
Profit - - -	$5,250 00

Or allowing in the first calculation, the sum of $10,000 for contingencies, we should have:

Apparent profit - - - - - -	$24,750 00
Allowance for contingencies - - - -	10,000 00
Profit - - -	$14,750 00

Another estimate of the cost of 640 acres, fenced in the ordinary method, and containing a house upon it like the plan, would stand as follows:

Six hundred and forty acres, in account with the cultivator.

	Dr.
To 640 acres of land, at $1 25, is - - -	$800 00
Four miles, or 1,280 rods, at 20 rails to the rod, gives 25,600 rails, to which add for enclosures, cribs, &c., 1,400 rails. Total of rails is 27,000, which, at $3 50 per hundred, gives - - - - -	945 00
Breaking up 640 acres, at $2 25 per acre - -	1,440 00
House like plan, laying up fence, and well - -	300 00
Harrowing and sowing seed, at 60 cents per acre -	384 00
Mowing, raking, and pressing 960 tons, (*one and a half* ton per acre,) at $2 50 - - - - -	2,400 00
Transportation of 960 tons of hay to New Orleans, at $8 per ton, is - - - - - -	7,680 00
Amount - - -	$13,949 00

	Cr.
By sale of 960 tons of hay, at $20 per ton, is -	- $19,200 00

Income, as above - -	$19,200 00
Expenditures - - -	13,949 00
Profit - -	- $5,251 00

We have, then, a profit of $5,251 on six hundred and forty acres, *after paying for the land, with a good house, fencing in the ordinary manner, and calculating the product at only one and a half tons to the acre, and the price at the very lowest sum of* $20.

The reader must also bear in mind that the expenditures of the *second* year are materially diminished, and the profits consequently increased. The original cost of the land, and nearly the whole expense of breaking up the sod, are saved. In many cases no ploughing of the ground, *at first*, will be required. After burning the prairie grass in the spring, the seed may be sowed and *harrowed in at once.*

The following estimate exhibits the profits and expenditures of the *second* year:

Six hundred and forty acres in account with the cultivator.

	Dr.
To harrowing and sowing seed, at 60 cents per acre -	384 00
To mowing, making, and pressing 1,280 tons, (2 tons per acre,) at $2 50 per ton - - - -	3,200 00
To freight on 1,280 tons to New Orleans, at $8 per ton	10,240 00
Amount - - -	$13,824 00

	Cr.
By sale of 1,280 tons of hay, at $25, (average price at New Orleans,) is	$32,000 00
Income, as above	$32,000 00
Deduct expenditures	13,824 00
Profit	$18,176 00

Another material reduction, of the expense attending the cultivation of hay and other crops, will be found in the use of some of the mowing and reaping machines recently invented.

A machine of this description, invented by Mr. Obed Hussey, of Cambridge, Maryland, has of late excited general admiration, from the neatness and rapidity of its execution, and the great amount of labor which its use will save. Its introduction on large farms, of the description we have mentioned, will undoubtedly be followed by remarkable results. These machines, when in good order, (and they seldom need repair,) can cut from twelve to fifteen acres of grass, and from fifteen to twenty acres of wheat, daily.

The following letter from John Stonebraker, Esq., of Hagerstown, Maryland, will exhibit his experience in the use of this machine.

He was induced (as the writer knows from personal communication with him on the subject) to try it from the representations of others, and with many misgivings as to the result. That trial, however, has satisfied him and with him, many of his neighbors, of the great utility of the machine.

The letter is as follows :

HAGERSTOWN, *August* 15, 1837.

DEAR SIR: Will you please give this a place in your paper, for the benefit of wheat growers. As the subject is of public interest, it is hoped that other papers will circulate it through the grain growing districts of the country.

I procured a reaping machine this summer of Mr. Hussey, the inventor, which I have used through my wheat harvest. It was in constant use every day, and performed its work to my satisfaction, and far better than I had any expectation of, when I first engaged it of Mr. Hussey. When the ground is clear of rocks, loose stones, stumps, &c., and the grain stands well, it cuts it perfectly clear, taking every head; and, if well managed, scatters none, but leaves it in neat heaps ready for binding. When the grain is flat down, the machine will of course pass over it; but if it be leaning, or tangled only, it is cut nearly as well as if standing, excepting when it leans from the machine, and then if the horses are put in a trot it will be very well cut. But in cutting such grain much depends on the expertness of the hand who pushes off the grain, in making clean work and good sheaves. I found the machine capable of going through anything growing on my wheat land, such as weeds and grass, no matter how thick.

After my harvest was over, I cut my seed timothy, with the same neatness and ease that I did my grain. As respects the durability of the machine, I can say this much for my machine, that not the least thing has given out yet; it appears as strong as a cart, and but little liable to get out of order, if well used. I was advised by Mr. Hussey, of the necessity of keeping some of the

parts well greased; this I have punctually attended to, and no perceptible wear yet appears, beyond the ordinary wear of any other machinery.

It is immaterial to the machine whether the speed be a walk, or trot; although a walk will make the most perfect work. My speed was a common walk, but a trot is sometimes necessary to counteract the effect of a strong wind when blowing from behind, in order to incline the grain backwards, on to the platform, to make good bundles. A quick walk is required to make good work in very short and scattering grain. The machine performs well, up or down hill, provided the surface be not too broken. By its compactness and ease of management, rocks, and stumps too high to be cut over, can be easily avoided. Although a rough surface is very objectionable, yet I have cut over very rocky ground with no material difficulty. I can say one thing which to some may appear incredible, but it is not the less true: the cutters of my machine have not been sharpened since I have had it; nor have I yet seen any appearance of a need of it in the quality of its work. How many harvests a machine would cut without sharpening is hard to say; I propose sharpening mine once a year only. I have used two horses at a time in the machine, and sometimes changed at noon; they worked it with ease, the draught being light. I took no account of what I cut in any one day, with this exception: in less than half a day I cut six acres, and was often detained for want of the requisite number of binders, by which much time was lost. My machine being something narrower than those generally made by Mr. Hussey, I could cut but about one acre in going two miles; this, at

the moderate gait of two and a half miles per hour, would amount to twelve and a half acres in ten hours; and at four miles per hour, a speed at which the work is done in fine style, the amount would be *twenty* acres in ten hours. I should judge my quantity per day to range between ten and fifteen acres, yet I am decided in the opinion that I can cut twenty acres in a day, of good grain, on good ground, by the usual diligence of harvest hands, with a little increase of my usual speed, and a change of horses. Two hands are required to work the machine, a man to push off the grain and a boy to drive, besides a number of binders, proportioned to the quantity cut. As the machine can be drawn equally fast in heavy or light grain, the number of binders is necessarily increased in heavy grain, except an additional speed be given in light grain. Under every circumstance, the number of binders will vary from four to ten; and, when the usual care is practised by the binders, there will be much less waste than in any other method of cutting.

I speak with more confidence of the merits and capacity of Mr. Hussey's reaping machine, from the circumstance of having pushed the grain off myself for several days, in order to make myself practically and thoroughly acquainted with it, before putting it into the hands of my laboring men. The land in this county being rather rocky and uneven, it is hard to say what may be the ultimate advantage of these machines to our farmers; but from what little experience I have had, I am resolved not to be without one or two of them. I can therefore recommend the machine with confidence, especially to those who have a large proportion of smooth

ground in cultivation. It is undoubtedly a labor saving machine, and worthy of their attention.

JOHN STONEBRAKER.

Mr. Bell, *Editor of the Torch Light.*

To this testimonial from one of the best and most practical farmers in Maryland, could be added many more, should they be needed. Farther improvements on the part of the inventor, during the past year, have much increased the power of the machine; and its adoption, as a valuable agricultural implement, is becoming very general.

One of these machines is now in the possession of the writer, which arrived too late for use during the harvest of the present season. From one or two trials, however, and those under the disadvantageous circumstances of arranging a new machine, and the forced selection of a spot little suited for experiment, no doubt remains of the result.

We add a letter to the inventor from Colonel Tilghmann, who also resides near Hagerstown, Maryland.

September 15, 1837.

Sir: Your wheat cutting machine was used by me in securing my clover seed. With one man, three boys, and two horses, we cut about twelve acres per day. *The operation was in every respect complete.* The clover was well cut, and deposited in proper sized heaps, and no raking required, further than to remove the heaps of cut clover from the track of the machine. The whole operation was easily performed by the hands and the horses.

In the operation of cutting wheat, I followed the machine for two hours in the field of Mr. John Stonebraker, during the late wheat harvest, and can vouch for the operation in securing his wheat in the manner described in his publication. The late improvements made by you in your machine have added greatly to the beauty and facility of its operation.

Yours, respectfully,

F. TILGHMANN.

Mr. Hussey.

We add the following notice of this machine, from Messrs. S. and E. P. Le Compte, enterprising farmers, of Cambridge, Maryland, as follows:

Cambridge, *July* 3, 1838.

We have employed Mr. Obed Hussey's wheat cutting machine to cut for us about thirty-four acres; the greater part of which was very *heavy*. We were remarkably well pleased with the performance of said machine, and are of opinion that, with proper management and attention, it will cut twenty acres per day, and save it much better than any other mode of cutting we have ever tried.

S. & E. P. LE COMPTE.

To which is appended the following postscript:

I have been a practical farmer forty years; and am well satisfied, that, on a large farm, this machine will save wheat enough, beyond the scythe and hooks, to pay all the expense of cutting and binding.

SAMUEL LE COMPTE.

Further details of this excellent invention will be found in the appendix.

Various improvements in sowing and raking deserve a passing notice. Valuable machines are furnished for the former purpose at $25, for the latter at $15. By the use of these machines, thirty acres can be sowed, and the same quantity raked daily; the attendant riding throughout the whole operation, *on a comfortable seat with springs!*

The operations of machines of this description, on the smooth and fertile prairies of the west, is easily imagined. There, if any where in the wide field of agricultural experiment, will be found the scene of their advantages and triumphs.

In confirmation of the average product of two tons of hay to the acre, which we have assumed as the basis of our calculation, we call the attention of our readers to a second letter from Judge Porter, addressed as before.

EUGENE, *March* 7, 1837.

DEAR SIR: I rejoice to learn that your attention has been drawn to raising hay. By slow degrees I have been turning my farm to pasture and meadow. A year ago last autumn, I sowed sixty acres of timothy, herd, and orchard grass, in the overflowed bottom of the Wabash; and twenty acres of it I sowed in wheat, when stocked. From the portion in wheat, I had a fraction less than thirty bushels to the acre, and I am satisfied there would have been thirty-five, if it had not been sowed so early and grown so luxuriantly that patches fell and did not fill. It was of the red chaff bearded wheat, and weighed sixty pounds per bushel.

A part of my grass I mowed the first of June, and obtained two tons per acre. *I mowed the same a second time, and produced from one ton to one and a*

half per acre. The balance I mowed, with a product of two tons, after harvesting. My experiment in wheat satisfied me, that if we have any land secure from "winter killing," it must be our river bottoms. This I think is owing to their protection by an adjoining bluff, and the soil being compact and not liable to be thrown up by the frost. All my neighbors predicted I should not reap my seed, and I was, therefore, more close in my observations.

The whole of the land, above mentioned, had been planted the last ten years in corn, and I am confident the profit was more than that of any three years preceding.

Should you visit my residence next June, I will satisfy you, that I shall cut *three tons of hay from every acre the first crop.* I have a hundred acres adjoining, which I intend to keep my cattle on, until August, when I shall plough the same, and at the proper season sow my wheat and timothy seed. I may fail in my wheat, but nothing can destroy my timothy. As I have commenced a detail of my experiments, I will tell you how I have succeeded with clover on our upland or sand prairies. My brother farmers discouraged me, and I yielded to their opinion, till I found my best lands were tiring with a continued round of corn, wheat, oats, rye, and barley. A year ago last spring, I sowed fifty acres with oats and barley. The ground was well prepared, and rolled with a two yoke of oxen roller. The spring was favorable, and when I harvested my barley and oats, the clover was mid leg high and in full flower. It made a fine fall pasture for my sheep, hogs, and even cattle. Last spring, when the clover

was shooting for flower, I turned my cattle in. I will not tax your credulity by even conjecturing what the product was per acre; but I kept on it, until winter, two hundred head of sheep, (and you know how they eat,) several horses, one hundred hogs, and sixty or seventy neat cattle, till my wheat fields were clear. There were, in all, three enclosures, and I changed for the health of my sheep. I shall sow about the same quantity this year, but change the experiment a little. In connexion with the clover, I shall sow about one-third or one-half in orchard grass. I have tried this method on a small scale, and believe, that sow clover as thick as you may, it will produce a third more when mixed with orchard grass. My knowledge of the nutritious properties of this admixture, was gained by accident. I had a small patch for seed, and it was necessary to pasture it. In doing this, I found my cattle to thrive upon it exceedingly. Indeed, I have known cattle to eat it out by the roots, and reject clover and timothy.

I am a great admirer of your plan of enclosing farms by hedge and ditch; but I think I could offer you a substitute for blue grass, (to sow on the embankment,) that will be far preferable. I allude to the "gama" grass. I have conversed with several who have cultivated it, and they say that it has the strongest root of all the grasses. The blue grass has a very delicate root, and cannot withstand even a moderate drought. The reason why my attention was turned to it, was this: I have about eight hundred acres of overflowed land, designed by nature to be "levéed," and my first thought was to find some grass that would prevent the "levée" from crumbling. Besides, its incredible product of hay is worthy

of the farmer's notice. I was assured by a gentleman, that, every thing favoring, *ten tons could be cut from an acre in one season*, so rapid is its growth!

Yours, with great respect,

JOHN R. PORTER.

Before closing this chapter it may be well to mention, that the extreme cheapness of constructing "timber railroads," will materially reduce the price of transporting the produce of inland farms to navigable water. From the testimony of able engineers, it appears that roads of this description can be made at the trifling cost of *eight hundred dollars per mile.* Ribbons of maple, or, what is equally good, burr oak, are substituted for iron rails, and form an admirable track for horses. Power, of this description, will impel cars at the rate of ten miles per hour; and with increased means, iron rails can be added for locomotives. The very ingenious contrivance of Mr. Cram, for driving piles in uneven or soft ground, lessens vastly the expense of grading. By these piles, ravines are crossed with ease and economy.

Those who have not reflected on this subject, cannot estimate the advantages of these cheap railroads, in regard to farms. Besides the gain of time in rapidity of travelling, the expense of marketing produce is reduced at least three-fourths. A farmer residing eight miles from market, and cultivating one thousand acres for the sake of hay, would, at the estimates before given, raise at least two thousand tons. The transportation of this by the ordinary modes, would cost $2 per ton, amounting to $4,000, and make two thousand loads. The use of a

railroad like the one described, would enable him to convey the same amount of produce at fifty cents per ton, saving the sum of $3,000. The whole road would cost but $6,400, the interest of which is $384, and could be constructed from the contributions of those residing along the route.

It is seriously questioned, whether the western States could not use this form of railroads with great profit for the first few years, until the revenue derived from tolls and travellers would allow the substitution of an iron rail.*

Experiments of great accuracy have been lately made to test the different degrees of friction, under a change of circumstances; which we add as exhibiting how small an amount of power is requisite to draw one ton on a railroad. Forty-two pounds applied over a pulley, will draw on a railroad, entirely of wood, one ton in weight. Estimating a horse power at one hundred and fifty pounds, one horse could draw easily, at a rapid rate, three and a half tons.

The following is the experiment on a stone at rest in the first instance, on smooth quarry ground:

	Pounds.
Power required to move, horizontally, a stone weighing 1,080 pounds, at rest on a quarry floor, is	750
Do. resting on a plank	652
Do. on wood over the floor	606
Do. if the planks are soaped	182
Do. if on rollers of timber, there is required to put it in motion	34
Do. to draw it after started	28
Do. on platforms and rollers	22

* See letter from J. Wilkinson, Esq. in the Appendix.

CHAPTER VII.

Adaptation of the western prairies to the cultivation of flax. Quantity of seed to be sown, and time of sowing. Amount of stem, and its worth. Amount of seed. Amount of oil from a bushel of seed. Hill and Bundy's machine for dressing flax without dew-rotting. Notice of the short staple produced by a new process. Manufacture of paper from flax, and other materials.

The soil of the prairies is so admirably adapted to the growth of flax, and the profits of that article in its various preparations are so great, that it seems destined, at no distant era, to become the main production of the western States.

Late improvements in breaking and drying flax have materially enhanced the value of the crop. Not only the ordinary long staple, is now readily spun, but the fibre (by a new process) is reduced to such a texture, that it can be spun and worked into linen cloth, *on the same machinery, and by nearly the same process, as cotton, with but little difference in expense.* The former tedious process of dew or water rotting, as well as that of pulling flax, are also now dispensed with.

Before examining the increased advantages of the flax crop, resulting from the application of these new discoveries, we shall present our readers with a concise detail of its cultivation and products.

1. The result of experiment shows that a rich and moist soil is best adapted for the luxuriant growth of flax.

2. The proper time for sowing flax seed is as early in the spring as the ground can be prepared for its reception.

3. The quantity of seed, necessary to be sown per acre, varies from a bushel to a bushel and a half.

4. If the crop is free from weeds and of good length when ripe, it can be cradled.

5. Flax can be pulled, in the ordinary mode, at $2 50 or $3 per acre, by the use of the machine referred to in the note,* at about thirty-seven and a half cents per acre.

6. From twelve to fifteen bushels of seed is the average product per acre.

7. One ton of stem may be assumed as the average yield per acre, though in England this amount is often doubled. From one ton to one ton and a half, can easily be raised on the rich soil of the prairies.

8. The stem alone is worth $12 per ton.

9. The seed, in the eastern markets, varies from $1 50 to $2 per bushel.

10. From three to three and a half tons of the stem will furnish one ton of dressed flax, ordinary long staple.

11. Dressed flax is worth, for exportation, six cents per pound, or $120 per ton.

12. The labor of preparing dressed flax is estimated at from one to three-quarters of a cent per pound.

13. Fifteen pints of oil are allowed to each bushel of seed.

From the above data, we can readily perceive how advantageous the cultivation of flax will be when conducted merely with reference to the seed, oil, oil-cake, or production of the long staple for cordage and

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* Brittain's flax pulling machine. This machine is drawn by one horse, and pulls four acres daily.

coarse cloths. The cake alone is estimated as fully paying the expense of manufacturing the oil.

Those whose means will allow of large plantations devoted to this product, will find it advantageous to break their own flax. This can be done by water power, if accessible; if not, by the purchase and erection of a small steam-engine, which will answer the double purpose of breaking the flax and pressing the seed. The profit of manufacturing seed will appear, from the quantity of oil obtained, and its market value. Oil of this description may be estimated as worth, at the west, from $1 to $1 37 per gallon. Many who have made the experiment, assert that the woody fibre obtained from the flax will support the engine during the whole operation.

Of the profit derived from three hundred and twenty acres of flax, cultivated with reference to the sale of the seed and stem, we have spoken in a previous chapter. The increased value of the same, when manufactured into oil, and the ordinary long staple, will form the subject of remarks hereafter.

In Loudon's Encyclopedia, (the most valuable and comprehensive treatise on agriculture ever published,) will be found a description of Hill & Bundy's machines for breaking hemp and flax without dew rotting. Their small cost renders them accessible to those of moderate means. They are described as "portable, and may be worked in barns or any kind of out houses; they are also well calculated for parish work-houses and charitable institutions; a great part of the work being so light, that it may be done by children and infirm persons. And such is the construction and

simplicity of these machines, that no previous instruction or practice is required. The woody part is removed by a very simple machine; and by passing through a machine equally simple, the flax may be brought to any degree of fineness, equal to the best used in France, or the Netherlands, *for the finest lace or cambric.* The original length of the fibre, as well as its strength, remains unimpaired; and the difference of product is immense, being nearly two-thirds, one ton of flax being produced from four tons of stem. The expense of working each ton obtained by this method is only £5 sterling. The glutinous matter may be removed by soap and water only, which will bring the flax to such perfect whiteness, that no further bleaching is necessary, even after the linen is woven; and the whole process of preparing flax may be completed in six days."

For the purpose of ascertaining whether flax could be raised with advantage on the western prairies, Mr. Schermerhorn visited one of the largest flax manufactories in the United States, conducted by Mr. Sands Olcott, at New Hope, Pennsylvania. The results of that investigation will be found in the following letter, together with a description of the short staple we have mentioned:

NEW YORK, *July* 28, 1838.

DEAR SIR: Agreeably to your request, on my return from Washington City, I visited Mr. Sands Olcott, of New Hope, Pennsylvania, the gentleman who has discovered a method of preparing the short staple flax, (of which you showed me a specimen at the Patent Office,) so as to make it into linen on the common cotton machinery now in use. It is, indeed,

a beautiful and valuable article, having such a fine gloss or silky appearance, that most persons mistake it for raw silk. The introduction of this article will be of great importance to our country, and will produce a great and profitable change in our manufactories. I found Mr. Olcott very ready to communicate to me such information as I was in search of, in reference to the cultivation of flax, and manufacturing it into his short staple, with a view of ascertaining whether the raising of flax can be made profitable on our western prairies.

From the information I have received, I have no doubt that linen of as good quality can be made from the short staple prepared by Mr. Olcott, as has been made by any method heretofore pursued. I know it may be conjectured that, by separating the fibre and bleaching it, in preparing the short staple flax, the linen made from it will not be of as good quality as that made in the old way. But if you will go to the trouble of taking a few threads out of any piece of linen, and untwist them, and then pull them to pieces, you will find you have the same kind of article from it that Mr. Olcott calls his short staple flax. From this it appears to me that, by the ordinary process of water or dew rotting, breaking, swingling, hatchling, spinning, weaving, and bleaching, the fibre of the flax, when manufactured into linen, in the common way, undergoes the same change in separating the gluten from it that is effected by Mr. Olcott, by a short and speedy process, before it is made into cloth. Indeed, I think it will make a better and firmer linen, because the gluten is perfectly separated from the fibre before it is woven;

whereas, by the old method, much of the gluten remains in the fibre after it has been water and dew rotted and manufactured into cloth, and which is separated by bleaching. Consequently, according to the quantity of gluten separated from the cloth, it becomes loose and open, though this defect the manufacturer studies to disguise by starching. From experiments already made, Mr. Olcott is satisfied that his short staple flax can be manufactured into linen, on common cotton machinery, as easy and cheap as cotton shirting can be made of the same quality. I mean now only as to the price of spinning and weaving per yard. If this be so, the flax crop will soon become of as much importance and profit to the farmers and manufacturers of the northern States, as the cotton crop is to the southern States; for the difference between linen and cotton cloth of the same quality, is about as one to four, or twelve and a half cents to fifty, in favor of linen, while the flax crop can be raised in half the time, and with less than half the expense of a cotton crop. This discovery of Mr. Olcott will make as great a change in the linen trade as the invention of Whitney's cotton gin did in the cotton trade; and must, in a short time, greatly increase the demand, and enhance the value of prairie lands, in Indiana, Illinois, Missouri, and Wisconsin, which are admirably adapted to the cultivation of flax. Indeed, I have seen a wild flax, resembling our common flax, grow spontaneously in the prairie. Farmers settled on the prairies of the west will do well to turn their attention to the cultivation of flax, as one of the most productive crops they can raise. The lands in New

Jersey and Pennsylvania, in the vicinity of New Hope, as an average crop, yield one ton to the acre of the stem, which sells readily at $12 per ton; and it is fair to calculate the flax seed worth at least as much more from an acre, which will amount to $24, the avails from an acre of flax. This, the farmers here consider doing a good business. However, in our rich prairies of the west, we can raise from one and a half to two tons per acre, as easily as they raise one in New Jersey; and by sowing our seed the first crop on the prairie sod, we shall have no weeds for some time to contend with. Instead of being under the necessity of pulling our flax by hand, we shall be able to reap it with our mowing machines, and this will enable our farmers to raise very extensive crops, from which they will realize great profits.

Mr. Olcott informed me, that in his flax establishment at New Hope, he works up about 3,000 tons of flax in the stem per year; and that this will produce about 430 tons of his short staple flax: that is, it takes seven tons of the raw material to manufacture one ton of short staple fine flax. The expense of manufacturing the fine flax, including the price of the raw material, is about $250 per ton. The expense of making this fine flax into fine linen, will be four cents a yard for spinning, weaving, and puting it up ready for market. This calculation is made on the supposition that prices for spinning and weaving will be about the same as that of cotton. In the above estimates, however, nothing is included except the expense of the hands that do the work. The interest on the capital invested, the

risks on the building, and wear and tear of the machinery is not taken into the account.

I deem it very important for the interests of our country that linen factories should be established; and if the profit arising from this business was generally known, I have no doubt capital to any amount could be raised to carry them on very extensively. As I take a deep interest in this matter, I have endeavored to obtain all the information I could on the subject, with a view of calling the attention of capitalists to this branch of business. I will now give you briefly the sum of the matter:

1. Estimate for buildings and machinery to manufacture 1,000 tons of short staple flax per year, according to information derived from Mr. Olcott, will cost about - - - - - $30,000

The actual expense of preparing 1,000 tons, including the expense of the raw material, at $250 per ton - - - 250,000

$280,000

Now let us estimate this fine flax worth fifty cents per pound, which will not be deemed an extravagant price, when it is considered that every pound of flax will make from four to five yards of cloth, say four yards, and that this can be manufactured at *four cents* per yard. These 1,000 tons, being 2,000,000 pounds, will be worth, at 50 cents per pound - - - - $1,000,000

Now deduct from this, as above, for buildings, machinery, raw material, and ex-

pense of manufacturing the short staple flax - - - - -	$280,000
Which leaves a profit, after paying for building and machinery - -	$720,000

2. Estimate for manufacturing the short staple into fine linen. I have been informed, by gentlemen engaged in cotton factories, that it is considered a fair and safe estimate, in establishing cotton factories, that every loom you put into operation will cost $1,000. This includes all expense for site, buildings, machinery, &c. A power loom, to go into complete operation, it is estimated, will turn out 30 yards of cloth a day. Then to manufacture 1,000 tons of fine flax, being 2,000,000 pounds, which will make 8,000,000 of yards, you must have in operation about 850 looms, which, at $1,000 each, give $850,000

For spinning 2,000,000 pounds, at 8 cents per pound - - - -	160,000
For weaving and puting up 8,000,000 yds., at two cents per yard - - -	160,000
For 1,000 tons or 2,000,000 pounds of short staple flax, at 50 cents - - -	1,000,000
The whole expense of buildings, machinery, labor, and stock, for producing 8,000,000 yards of fine linen, is - - -	$2,170,000

If we estimate this linen at fifty cents per yard, then 8,000,000 yards, at 50 cents, is - - $4,000,000

Deduct for buildings, machinery, stock, and labor - - - -	$2,170,000
Which leaves the net proceeds - -	$1,830,000

Now, according to the above estimates, the farmers on the western prairies would make from a flax crop at least from $25 to $30 per acre from their land, which cost them only $1 25 per acre.

The manufacturers of the raw material into the fine short staple flax, would make between two and three hundred per cent. on their capital invested in this business.

And the linen manufacturer, after paying for all his buildings, machinery, stock, and labor, would clear nearly one hundred per cent. the first year; and after that his profits will also be between two and three hundred per cent. on his investments. From this it is evident that linen might be manufactured and sold from fifty to one hundred per cent. below the above estimated prices; and yet, all engaged in this business make it a very profitable operation. This would be a great saving to the consumers of this article. But this is not the only advantage the country will derive from the introduction and manufacture of the short staple flax; for we shall have introduced a new staple, admirably adapted to be combined with other staples, particularly that of silk. This will greatly aid the silk manufacturers of our country, and enable them soon to furnish a considerable quantity of this new and very substantial article for wearing apparel for the use of gentlemen. If our farmers and manufacturers were to

turn their attention to the cultivation of flax and manufacture of linen, and of a silk and linen fabric, it would not only be very profitable to themselves, but annually save several millions of dollars to our country, which we now pay to other nations for linens and silks. This subject is certainly worthy the attention of every man who has the best interests and prosperity of his country at heart; and I hope it will claim the attention of the farming and manufacturing interests in the States most interested in this business.

I have given you my views freely on this subject. They have been drawn up hastily; let them pass for what they are worth, and make what use of them you please.

I am, with great respect,

Your friend, &c.,

J. F. SCHERMERHORN.

Hon. H. L. Ellsworth,

Washington, D. C.

We are aware that objections may be raised to the sum of fifty cents per pound for the "short staple;" though that price might be sustained by reference to the present cost of linens.

The short staple, however, can be prepared at about $250 per ton, and afforded at twenty-five cents per pound, giving an immediate profit of one hundred per cent. Allowing it to be bought at this price, it could be manufactured into linen and sold at twenty-five cents per yard; yielding, in this shape, to the manufacturer, a further profit of one hundred per cent., as his reward.

It is found by experiment, that one acre of good land will yield a bale (or four hundred pounds) of cotton,

ready for the market ; and it is believed a similar amount of the short staple may be raised upon an acre of the western prairies. The calculation is as follows: Seven tons of the flax in stem are required for one of the short staple. At the rate, therefore, of one and a half ton (or 3,000 pounds) of the stem per acre, it will be found that each acre will produce four hundred and twenty-eight pounds of the short staple ; a fact, exhibiting conclusively the future value of the prairies, should the culture of flax be generally adopted.

In many portions of our country, especially in New Jersey and New York, flax is raised with reference to the seed alone, and the lint is thrown away.

Mowing flax has been resorted to by many farmers, in preference to the tedious and expensive modes of pulling, heretofore in use. This, however, is a process which always leaves the stem entangled and difficult to break. In the new method of reducing flax to a fibre resembling cotton, it is believed that less care in gathering will be required ; especially if the "brakes" are improved by the addition of transverse rollers, to crush the stem, in whatever position it may be presented.

In this mode flax can be prepared at small expense for paper. Linen rags are high and scarce, and, although well worked and worn linen is supposed to be better than new flax, yet it is believed this preference will disappear by a careful preparation of the pulp. If flax is raised for the seed alone, and the crop proves good, what a vast amount of lint for paper can be easily obtained !

And here we cannot omit to mention that a new process of manufacturing paper from the fibre of beet

roots, and from corn husks, will add much to the raw material in general use. It is found that husks make an excellent and soft paper. The mode of bleaching them and separating the mucilage from the "lignin" or fibre, has been greatly improved.

In no country could the manufacture of paper be carried on with greater profit than in the Upper Wabash, if substitutes can be procured for paper rags. No paper mills have been established there, while the demand for paper is extremely great.

During the year ending on the 30th of September, 1837, rags to the amount of $439,229 were imported to this country. These rags, when dusted, bleached, and reduced to pulp, must have lost about twenty-five per cent. in weight, making the cost of the base of good and even ordinary printing stock, nine cents per pound.

It is believed that husks of maize or Indian corn, can be selected clean by the farmer, baled, and sent any reasonable distance, for one cent per pound. They are bulky, of but little value as food for animals, and are generally wasted in the field. These husks, however, form an admirable base for paper, and their mucilaginous properties are easily extracted. It is found that the "lignin" or fibre constitutes about seven-eighths of its original; or, in other words, the loss incurred by the separation is only one-eighth.

No difficulty attends the process of bleaching this fibre; but, owing to the strange action of the chloride of lime upon it, (the same as in the case of linen rags,) the loss is greater in lignin and coloring matter, than in mucilage. By the ordinary methods, the loss sus-

tained in the preparation of husks for paper, would equal five eighths of the whole quantity selected from the field; while, by the new process, the cost of the material, after maceration, waste, and bleaching, may be estimated at three cents per pound. It is believed, therefore, that as good a base for paper can be made for four cents, as is now furnished for nine cents per pound. It is said that the "lignin" of corn husks, is even whiter than that of flax, unless the same has been much worn or washed.*

Printing paper is, undoubtedly, the most profitable paper made, as it sells readily from ten to fifteen cents per pound. Indeed, there can be no question of the great profit which attends the manufacture of this article, even on a moderate scale.

How easy would it be for enterprising capitalists to improve some of the fine hydraulic power at Lafayette, in manufactures of this kind; and, while reaping a rich recompense for all their trouble, to remove one of the great embarrassments now experienced by printers.

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* Those who wish more ample information in regard to the new process mentioned, are referred to the inventor, Mr. Homer Holland, of Westfield, Massachusetts.

CHAPTER VIII.

Manufacture of beet sugar. Broom corn. Tobacco. Hemp. Corn stalks as fodder. Cultivation of the sun flower. Breaking prairie. Common and standard weight of grain. Recapitulation of the machines referred to in this work.

Many of the estimates presented in the foregoing chapters, have been made with reference to the cultivation of some single product, and its after exportation to the markets of the eastern or the southern States. They may, therefore, be found to involve expenditures at the commencement, beyond the means of any but the richer class of farmers. But for the enterprising settler, whose resources are more moderate, far less capital is needed. His great objects are to secure a comfortable home; to provide subsistence for his family, and to reach, by a rapid advancement, the field of more extended and enriching operations. To him these estimates are valuable, as exhibiting the great fertility of the soil, and placing before him many of the products best adapted to it. He can reduce and divide these at his pleasure, to suit the operations of the first few years. During these years, if successful, and with prudence he will be so, he should find himself remunerated for the whole expense he has incurred, and able, by the overplus remaining, to increase his farm. He can then reap the full benefit of those more lucrative pursuits we have enumerated. Such has been the fortune of many, well known to the writer, who, emigrating to the western country a few years ago, have risen to be men of wealth, and of extended influence; such, too, will be the success of those who follow their example.

But, to continue the train of our remarks in the preceding pages, there are various other products, well

adapted to the soil of the prairies which demand a passing notice.

The cultivation of the sugar beet, has of late attracted much attention, not alone in this but other countries.

This beet is raised—

1. As a vegetable for the table, and food for cattle; and
2. To be manufactured into sugar.

In reference to the first purpose mentioned, the following short extract from a letter furnished by Edward P. Roberts, Esq., to the Agricultural Committee of Congress during the late session, gives the following information.

"The sugar beet I have successfully cultivated, not with a view of sugar making, but as a vegetable for my table, and as food for my cattle; and I feel justified from my experience in saying, that of all the varieties of the beet family it is the *best*, for the first purpose, being, from the great quantity of saccharine matter it contains, and the total absence of that earthy flavor peculiar to most beets, infinitely more acceptable to the generality of palates than any other. Indeed, as a table beet, so superior is it, that I should never think of growing any others. As food for cattle and hogs, when the acreable product of nutritive matter is taken into account, I believe it will be found to afford as much, if not more, substantial food than any other of the beet family; and I am very certain there is no other kind that such animals eat with more avidity, or on which they thrive better. For milch cows, when fed through the winter, in the proportion of from half a bushel to a bushel per day, (in addition to their usual allowance of fodder or hay,) I know of no food that I think equal to them

From their succulence, and the great quantity of saccharine matter they contain, they not only tend to increase the secretion of milk, but add immensely to its richness, and consequently to the quantity and quality of the cream. Cows thus treated will be kept in good condition, and generously contribute towards the emolument of the dairy. Horses, too, with the addition of a small portion of meal of any kind, or some one of the mill stuffs, may be kept well through the winter at work on three pecks a day. To render them acceptable to these latter animals, at first, salt should be freely sprinkled over them; by pursuing this course for a short time, they will become fond of their flavor, and eat them with readiness."

The white Silesian beet is generally esteemed the best for planting. The product of the sugar beet is variously estimated from 1,000 to 1,500 bushels per acre. Some have even maintained that on good land, and under a system of generous cultivation, upwards of 2,000 bushels could be raised per acre. Assuming, however, 1,000 bushels as the acreable product, and allowing 40 pounds to the bushel, we shall have a yield of 40,000 pounds per acre. This number of pounds, though adjudged too small by many, is the one given by Mr. Pedder as the result of extensive investigation in the manufactures and sugar beet plantations of France. For the mere purpose of feeding stock, these beets are worth about thirty cents per bushel, giving, even at this low estimate, the sum of $300 per acre. Deducting the whole cost of cultivation, which may be placed at fifty dollars, though in general half that sum would

be sufficient, we have remaining $250 profit on the acre.

A still greater diversity of opinion exists as to the per cent. of sugar which the beet will yield. The estimates vary from four to eight per cent. Mr. Pedder, assuming six per cent. as the medium, and 40,000 pounds per acre as the product of the roots, gives the following result:

Sugar, first and second quality		2,400
Molasses, two per cent	-	800
Cake, fifteen per cent	-	6,000
		9,200 lbs. per acre.

Another estimate, given by M. Iznard, Esq., the French Vice Consul at Boston, gives four tons of pomice or cake, and one ton of leaves, for manure, as remaining after the preparation of the first and second qualities of sugar.

From the above estimates, it will be seen that, in addition to 3,200 pounds of sugar and molasses produced from an acre, there will also remain about 8,000 pounds of cake, which (owing to the extraction by pressure of the water contained in the original roots) are more valuable as food for cattle, than the same amount of beets, fed directly from the field.

Of the profits to be derived from the manufacture of beet sugar, on an extended scale, there can be no question. Ample information on this point has been obtained from details of the income and expenditures of the French manufactories.

It has, however, been too generally thought, that

large establishments alone could derive much profit from the manufacture of this article. Numerous instances, however, could be produced, where the process of making sugar has been carried on in a small compass, and as a domestic concern, with great advantage. Small beet sugar manufactories could be established on farms; and from one hundred to one hundred and fifty pounds of sugar manufactured daily, with no other assistance than that given by the inmates of the house. "When stripped of mystification, (we quote from the pages of the Cultivator,) the process of making beet sugar has little in it more difficult than the process of making maple sugar. It consists in extracting the juice of the beet, purifying it, and boiling it down to a proper consistence to granulate. All the care and particularity recommended in the manufacture of beet sugar, might, no doubt, be applied advantageously to the making of maple sugar. The purification of the juice, and the reducing it to sugar, are managed on like principles, though the processes of purifying vary. The juice of the beet contains coloring and other foreign matters, which it is necessary to get rid of; and this is done, and the liquor rendered limpid, by the application of lime and animal charcoal."

Now beets can be grown, gathered, and washed by the laborers on a farm; they can be reduced by them to pulp, in a grater cider mill, and the juice can also be expressed by them in a common cider press. The purifying process is easily learned and practised by the inmates of a family, as are the processes of boiling down and sugaring off. A thermometer and æreometer are useful in managing the processes with certainty and

economy. They would be equally useful in the process of making maple sugar, and the thermometer in the business of making butter and cheese. The cost of both will not exceed three dollars. One serves to determine temperature, and the other specific gravity; and in five minutes the principles of either may be explained to a novice. What, then, we ask, is to hinder the farmer from raising the beet and extracting from it, when the labors of the summer relax, or are completed, the sugar necessary for the consumption of his family, or for market, with as little expense and as much certainty as he produces it from his sugar grove?"

Before closing that portion of our volume which relates to the comparative advantages of different grains, there are others which demand a passing notice. These, with various matters of importance, we shall mention concisely under their appropriate titles.

Broom Corn.—The cultivation of the common broom corn is attended with no small profit to the farmer. All the information relative to its culture and products may be presented under a few heads:

1. The quantity of seed required per acre varies from four to five quarts, according to the mode of planting in hills or drills; and should be sowed as early as the season will admit, and secure the seed from frost.

2. The product of the brush is from 600 to 1,000 pounds per acre.

3. The seed is worth as much for food as oats, and is excellent for stock, especially for running hogs.

4. The expense of manufacturing brooms varies from five to ten cents each, including all materials.

5. The product of seed is from sixty to one hundred bushels per acre.

6. The brush is sold by the pound, and is generally packed in bundles bound together by two stalks.

7. This corn should be planted thicker on very rich soil than elsewhere, or the brush will be too coarse for the manufacture of fine brooms.

Assuming that the product of seed is eighty bushels per acre, and the value that of oats, (say thirty cents per bushel,) we have from this source an income of $24 from each acre. To this should be added 800 pounds of brush, at nine cents per pound, making the whole income about $100 to each acre. The manufacture of the brush into brooms, which will sell ready at 25 cents apiece, would furnish agreeable employment to the families of farmers during long winter evenings, or other leisure hours.

Tobacco.—This is another article well adapted to the soil of the prairies, and extensively cultivated in some parts of Indiana. It is a useful product to cultivate, as the *first crop*, on lands where wheat cannot be introduced at once, owing to the extreme richness of the soil. On fertile land, four plants will often yield two pounds of tobacco, and the careful cultivation of from 4,000 to 5,000 plants per season is sufficient labor for one person. As the tobacco plant produces no manure, and is rapidly exhausting to the soil, it is not adapted to poor land.

Hemp.—The suggestions heretofore made in regard to flax, will apply with little variation to the culture of hemp, an article which is raised extensively throughout the western States. From four to five hundred weight may be regarded as the produce of hemp in fibre, and from ten to twelve bushels in seed per acre.

Corn stalks as fodder.—It is much to be regretted that the value of corn-stalks, as fodder, is so generally overlooked by many farmers. In the Farmers and Gardener's Magazine, (a valuable agricultural periodical,) will be found an account of eight acres of corn, which, after producing from thirty-five to forty bushels of corn per acre, furnished a sufficient quantity of stalks (when steamed) to keep ten milch cows, three horses, and one young heifer, in good order, for five months. Horses, too, are found to thrive exceedingly well upon this fodder. Even that portion which remains standing after topping corn is worth more for stock, if properly used, than a crop of clover which the same ground would produce. The same quantity of food would keep sixteen head of large cattle during the same time.

In the valley of the Wabash, where the winters seldom exceed three months, a like quantity of stalks would keep comfortably twenty-two head of cattle during feeding time. The calculation, as first given, is based upon the produce of forty bushels to the acre; to which one-third more (amounting in all to sixty bushels) should be added for an average crop on the Wabash. We shall find, therefore, that eight acres of stalks there, well gathered, cut small, steamed, and fed, would keep thirty head of cattle through a winter of three months, at the rate of three and three-quarters head per acre. How large an amount of stock could, in this way, be sustained from a section of six hundred and forty acres! If, for the more common kind, the Baden corn is substituted, averaging four ears upon a stalk, with corresponding stem and husks, a further benefit might be expected.

Sun Flower.—This valuable plant has been greatly neglected, from a belief of the exhausting nature of the crop. If the profits are such as represented, the objection abovementioned will have little weight with proprietors of fertile lands along the Wabash. The following extract of a letter to the Hon. H. L. Ellsworth, from James Smith, Esq., of Pikesville, Maryland, shows what has been done on the comparatively poor lands of that State:

"I planted about an acre of ground a few years since with sun flower, and obtained sufficient seed for nearly a barrel of oil. The oil was extracted by Mr. Barnett. We made use of it for the table, and found it kept well, and was esteemed equal to the best imported sweet oil for every domestic purpose. I have a little of this making (1833) yet remaining, and will send you a bottle if I can find an opportunity. I found the substance of the sun flower was too exhausting for the light soil we have on our hills in this neighborhood, but have no doubt it will be found profitable in other sections of our country, and particularly in the rich prairies of the west."

The residuum or oil cake must be highly beneficial for stock. Few plants are more hardy; indeed, in many climates, the sun flower seeds itself. Such we have noticed to be the fact in gardens in the City of Washington.

Breaking Prairie.—We should have added, in a previous chapter, that considerable of the expense which attends the breaking up of prairie, would be lessened, by the increased value of young cattle, taught to work during the process. Two old and well trained yokes, one

before and the other at the plough, with four or five couple of young steers in the middle, constitute a most efficient team. An advance on each yoke of steers, may be obtained on the completion of the work, of from fifteen to twenty dollars. Various contrivances of this kind for diminishing his expenses, will occur to the enterprising settler. Indeed, the difference of cost between hired labor and that which he performs himself, is always great, and should be recollected by the farmer.

Weight of Grain.—For the purpose of enabling our readers to make comparisons and calculations at their leisure, we annex the following table of the common and standard weights of grain from the Agricultural Chemistry of Sir H. Davy:

	Common weight per bushel.	*Standard weight.*
Wheat,	from 58 to 64 lbs.	60 lbs.
Rye,	49 to 56	56
Barley,	48 to 56	48
Oats,	30 to 42	32
Indian corn,	54 to 62	56

And the grain of each of these species produces, when ripe, the following quantity of flour and bread per bushel:

Wheat,	if weighing,	60 lbs.	—of flour,	48 lbs.	—of bread,	64 lbs.
Rye,	do.	54	do.	42	do.	56
Barley,	do.	48	do.	37½	do.	50
Oats,	do.	40	do.	22½	do.	30

The following list presents in a short compass the cost and advantages of the various machines referred to in this work. They have been mentioned partly on account of the aid they render in all farming operations, and because most of them have been

used, or ordered for that purpose, by the writer in the vicinity of Lafayette.

1. Clime's Double Plough.—The invention of Mr. Samuel Clime, of Doylestown, Pennsylvania. This machine costs $16, is drawn by two horses, and will plough five acres daily. One man can manage this with the same ease as an ordinary plough. With a powerful team, several of these ploughs could be united, and would cover seed wheat, obviating the necessity of harrowing. Two ploughs could be arranged to follow each other in the same furrow, when breaking prairie; the first one to cut the green sward two or three inches deep, and the second to enter the soft dirt, and throw it directly on the top of the inverted sod. In this way the sod crop has a fine soil to sustain it, the want of which is much felt, where the sward is hard, and the summer dry.

2. Hatch's Sowing Machine.—The invention of Mr. Julius Hatch, Great Bend, Pennsylvania. This machine costs $25, and will sow each kind of seed by graduating the gauges to its size, and scatters the same equally. It is drawn by one horse, the driver riding on a comfortable seat. From twenty-five to thirty acres can be sown daily, by changing horses, though less is usually done.

3. Hussey's Reaping Machine.—The invention of Mr. Obed Hussey, of Cambridge, Maryland. This machine costs $150, is generally drawn by two horses, and cuts of grain or grass from twelve to twenty acres per day. The teeth operate upon the principle of shears, and need sharpening but once or twice during the season. If this machine is applied to heavy grain,

three horses may be employed with advantage. Two men are needed in cutting grass; but more in cutting grain, where the same is bound.

4. Root's Raking Machine.—The patent is now owned by J. H. Ross, of Olean, New York. This rake costs $15. It is designed to be attached to two common wheels. The person who guides it rides, and elevates the rake when filled without stopping the horse. This rake is a good gleaner of wheat fields, and will, with the help of a boy and man, perform the daily labor of ten men.

5. Brittain's Flax Puller.—The invention of Mr. William Brittain, of New Hope, Pennsylvania. This machine costs $35, is drawn by one horse, and pulls from four to five acres daily. With a powerful team, two of the machines can be united, and a corresponding increase of work insured.

6. Brittain's Flax-breaking Machine.—Same inventor as before. This machine costs $300, and will break 3,000 pounds of stem, when rotted, daily. The whole expense attending the breaking this amount is four dollars and fifty cents, including the wages of one man, four boys, and coal needed for the machine: or it may be estimated at the rate of $3 per each two thousand pounds. The quantity broke daily makes 1,000 pounds of dressed flax. The usual price of rotted flax, ready for the break, is $15 per ton; of unrotted, $12.

7. Hussey's Corn-shelling Machine.—The invention of Mr. Obed Hussey, of Cambridge, Maryland. This machine costs $30, and performs the double operation of *husking and shelling at the same time.* It is also immaterial in what position the corn is presented.

In this machine fifty bushels of dry harvested corn can be husked and shelled per hour, or five hundred bushels in ten hours.

8. Buckminster's Planter.—The invention of Mr. William Buckminster, of Framingham, Massachusetts. This machine costs $15, and is made wholly of cast iron. It is adapted to all seeds that are planted in hills, and plants one, two, or three rows at a time. Twenty-five acres is the usual quantity per day.

9. Raymond's Shingle Machine.—The invention of Mr. J. S. Raymond, of Lodi, New York. This machine costs $100, and works with a revolving knife, cutting shingles from blocks previously softened by steam. It cuts 4,000 shingles per hour, and can be worked by horses, though steam or water power are best adapted to its full success.

10. Garnett's Cultivator.—The invention of Mr. J. M. Garnett, of Essex county, Virginia. This machine costs $6, has been lately much improved in construction, and equals the work done by any other similar contrivance. It is drawn by one horse, and will perform the labor of four ploughs.

11. Fay's Tenoning Machine.—The invention of Mr. Josiah Fay, of Baltimore, Maryland. This machine costs $100, and does the work of from ten to fifteen men, with great accuracy.

12. Woodside's Scarafier and Harrow.—This machine costs $150, and is highly recommended. It was lost while on its way to Indiana, by the burning of the Ben Sherrod, and has not been tried by the writer.

13. Page's Mortising Machine.—The invention of Mr. G. Page, of Baltimore, Maryland. This

machine costs, according to the size, from $50 to $175; is worked by hand, and does the labor of ten men.

14. Page's Ditching Machine.—This is not yet patented. It will cost $500, and cuts forty rods of ditch per day, making a handsome embankment at the same time. It is worked by a single horse, and can be hired at $2 50 per day. This machine has not yet been ordered by the writer, as no patent is obtained. Further statements in regard to it will be found in the Appendix.

15. Page's Planing Machine.—The irons, arbors, and gearing of this machine cost $75, and the wooden frame as much more; $150 for the whole. It is intended more especially for jointing and planing square lumber or short boards, but will, with trifling alterations, plane boards twenty feet long. It performs the labor of from twelve to fifteen men.

16. Page's Grooving Machine.—This machine costs $15, and the groove is cut by small pieces of steel put upon an arbor, like circular saws, and running with the velocity of two thousand revolutions per minute. A small tongue is cut from a board of suitable thickness by a circular saw. It performs the labor of fifteen men.

17. Page's Post-hole Augur.—This machine costs $10, with a set of extra cutters. It bores a hole nine inches in diameter and three feet deep in two minutes. In hard clay (such as would require a pick-axe) five minutes are allowed.

18. To these may be added a machine for making holes in posts and sharpening rails. It does the work

of eight or ten men, and saves more than one-half the rails now used in "Virginia or worm fences." This saving, where lumber is scarce, is an important item. Posts, with a single rail, are well adapted to the new embankment made by ditching, and will aid in perfecting the enclosure until the hedge is fully grown.

These machines not only save a vast amount of labor, but they often do so where labor could not be obtained *at any price.* From this advantage they seem entitled to the name of new created powers. By their use much can be accomplished; without them, often, nothing can be done.

A variety of machines for ditching, mowing by horse power, and ploughing by steam, will doubtless soon be patented.

The present machinist of the Patent Office is perfecting a machine for cutting grain and grass, which promises to be highly useful. No patent has been obtained for it, nor indeed can be, until his legal disability (as a member of the office) to take out a patent is removed. The principle of this machine somewhat resembles Mr. Hussey's; both cut by vibrating shears.

CHAPTER IX.

The hour of the emigrant's departure. The true condition of the country he has chosen. Its intellectual and moral situation. Its general health. The errors of the emigrant often the true cause of all his suffering. The course to be adopted to remove these evils. His advantages compared.

The adventurer, who wanders from his childhood's home, to settle in another and a distant clime, goes forth attended by a host of warm affections from the many who remain. He bears with him a rich treasure of commingled hopes and fears; prayers for his success, or apprehensions for his safety, as the heart-felt tribute of his early friends. To some, the hour of his departure brings a deep regret that they are not companions of his journey and the sharers of his joys; while, to others, the home which he has chosen seems but little better than an exile, and his lot as one of sorrow and privations. In the bright imaginations of the one, he seems hastening to a region such as Hope could picture or a poet paint; while the dark forebodings of the other have consigned him to a moral desert and a comfortless abode.

But the true condition of the emigrant is not found in such extremes. Animated with a just desire to attain an honorable independence, he is hastening to a land of brighter prospects than the one he leaves; to a scene of more immediate usefulness and action, and a home in which contentment will secure his happiness. In the exchange of residence he makes, no better feeling of his heart has suffered. He has trampled down no principle that would lead to virtuous action, or crushed any of those finer and deeply hidden sensibilities which adorn our nature. The memory of those whom he has left, lives still green within his soul. Separated, as he is,

by distance, he gathers to his bosom a fond group of treasured recollections, and lingers, though it be in fancy, around each cherished haunt of by-gone years. In his hours of deepest sadness—and, alas! who has them not?—will his heart go back to the home of other days, and the tender consolations that await him there. And while losing nothing, he has gained by the exchange. Under the operation of new motives, he is acting with an energy of character hitherto unknown, and rapidly reaching a position which it would have cost him years of effort elsewhere to attain. He is learning to depend upon himself; to feel that there is much for him to do, and that his efforts may contribute to the general good; not alone of those with whom he is connected, but of the community in which he lives, and, again, of the whole world.

We have indulged in these remarks, because we know that there are many who regard the situation of the western emigrant, especially if he is young, as a fearful exchange of comfort, principle, and health, for the deceptive prospect of accumulated gain. To their indistinct conceptions of his *real* situation, dangers the most appalling seem to lurk around his path. They believe that he has placed himself beyond the restraining influence of well-organized society, and afar from moral motives that might regulate his conduct. And more happy would they be, though lamenting all these evils, did they feel that his personal enjoyments were not diminished, or his health enfeebled, by much hardship and exposure.

That those should feel thus apprehensive who know not the rapid settlement and actual condition of the

western States, excites in us no wonder. It is hard, indeed, to realize, that hundreds of miles beyond the shores of the Atlantic may be found a mighty and a prosperous people, whose birth and existence lie within the compass of a few short years, and whose countless villages or crowded cities have arisen, as it were by magic, from the solitude of ancient forests, bearing witness to an energy of action that is bound by no control. And more startling still is the conviction, that this new and prosperous people, strengthened by the daily advent of thousands of the young, the enterprising, and deserving from all quarters of the world, is rapidly concentrating within its borders, not alone the wealth, but the controlling power of this vast Union!

The diffusion of knowledge and the preservation of good morals have ever been the objects of the wise and virtuous throughout all ages.

And what, for the accomplishment of these great ends, has been done, or is now doing, in the western States? Let facts answer the inquiry. Examine the munificent provisions of Michigan, appropriating for a university alone one million dollars, and five millions for a school fund. Look at Indiana, with five chartered colleges within her borders; with schools and seminaries in almost each long-settled county, and a generous appropriation of one section in each township for the purposes of education. Enter the medical, legal, and theological institutions of Cincinnati, the young Athens of the west. Test by the severest standards the acquirements of those who annually leave their walls, to scatter widely the rich treasures they have gained. Visit the older universities of Kentucky, with their extended

libraries and richly endowed professorships. Go within the Halls of Legislation throughout these different States, and behold the efforts of the friends of education to advance its interests, and the favorable notice which they gain. Listen to the animating discussions that are weekly carried on in the lycea even of the smaller towns. From thence go out among the people of these States. View the ardent thirst for knowledge that is everywhere exhibited, and their general intelligence on matters of political importance, no less than others.

And when these investigations are concluded, enter the numerous churches of the crowded cities; witness the throngs that assemble in them on the Sabbath, and their devout appearance; listen to the sound expositions of doctrine, and the eloquent appeals to feeling that issue from the lips of the Minister of God. Attend the Sabbath schools of each denomination, and view the correct deportment of the young of both sexes there assembled. And, again, travel these States in all directions, to be gladdened by the same testimonials of regard for religion and morality. Scarce one town can there be found but has some place of public worship, whose pulpit is statedly supplied, and where assemble many, often from a long and tedious distance, to manifest respect to these most sacred institutions.

The question should be rather, what, considering the brief period of their existence, is there that the western States have not done to establish and advance the cause of knowledge and morality. The individuals who compose the population of these States are not the idle, the dissipated, and the vicious; they are the active, the sober, and the honest. Collected, as they

are, from different portions of the Union, and from various quarters of the world, it is singular with what readiness they have consolidated into one extended brotherhood; presenting the elements of a character, which, when time shall have fashioned and fitted it together, will be found without a rival in the history of man.

The privations to which the emigrant must be subjected, after all, are few, and none but what an enterprising spirit will endure without complaint. He will be welcomed to his new abode by hearts as generous as have ever beat, and by friends who will continue such as long as he deserves their confidence. Humanity and kindness are eminently the characteristics of the western settler. The trials to which he has been exposed have taught him to relieve the wants of others, and he does it with a noble disregard of his own selfish interest. The stranger, whoever he may be, is invited to his hospitable dwelling, cherished as a friend while there, and parted from with a reluctance which is never feigned. His return, if it occurs, is welcomed with enthusiasm, and the tie thus formed in these few hours' of intercourse is kept unbroken, amid the changes and vicissitudes of life. What is it to the emigrant, surrounded by the stirring scenes of western life, that he does not hourly meet the studied graces of the fashionable world? He knows that the friendship of one honest heart is better than the cold regards of thousands. To him, it matters little that the leaves of the forest are sometimes his couch, and the canopy of Heaven his only covering. Privations, such as these, he feels will ere long disappear, and

leave him the resident of a delightful region, where life is enjoyed in its freshest and most winning forms; and where nature smiles arrayed in her most gorgeous colorings!

There remains another subject of no small importance to the western emigrant—the *health* of the new country he has chosen as his residence. And here we must inform him, at the outset, that experience has taught us to regard the many apprehensions on this great point, as almost wholly idle and unfounded. We believe that, with the exercise of ordinary care and prudence, and the blessing of Providence attending his exertions, the emigrant may enjoy as perfect and uninterrupted health throughout the western States as elsewhere. These States, like those of older origin, are not exempted from diseases; but that, in addition to this, they contain a permanent and fruitful source of ill health within their borders, we cannot admit. There is nothing in their geographical position, in their climate, or in facts, to warrant such conclusions.

We are no believers in the necessity of undergoing a tedious process of acclimation, when removing to this country. It is true, that the fatigues of travelling, connected with a change of diet, and considerable exposure, may produce a short indisposition; and where would these causes not do so? It is also true, that the settler, who exposes for the first time to the action of the sun a luxuriant soil, on whose surface large deposites of vegetable matter have decayed, generates around himself an atmosphere, in general, injurious to his health. But go to the older settled portions of these States, where causes such as these have long since disappeared, and

they will not suffer by comparison with almost any portion of our country. The State of Indiana, for example, is more healthy at this moment than western New York was a few years ago; and where, throughout the western country, can be found a region so regularly visited by disease as portions of the eastern shore of Maryland? Look at the former and present condition of Rochester, and other towns along that great thoroughfare, the Erie canal! Many of the disorders of the western States are those incident alone to a new country, and are gradually disappearing before the march of civilization and improvement.

But, again, in a majority of cases, the *imprudent conduct of the settler* is the cause of his diseases. No one who has witnessed the course pursued by many families, on their first arrival at their new home, could hesitate to believe, that to their own reckless braving of exposure must be attributed much of the suffering which they endure. It happens often, that the land which the emigrant has selected is unprovided with any tenement for his abode. To remedy this evil he removes at once to its vicinity. Spreading a temporary tent for the poor accommodation of his family, he commences the erection of a rude log cabin. After the severe toil of the day, he throws himself upon the damp ground, exposed to all the changes of the weather, and arises each successive morning to pursue the same imprudence. His own hardy constitution may at first resist the evils to which he is subjected, and possibly enable him to gain his object with his health uninjured. But he has those with him who are not thus vigorous. A few days pass away, and symptoms of ill

health surround him. Regarding these as hardly worth attention, he faithfully continues at his labor. The frame of his coarse habitation is completed; a rough and open roof is placed upon it; the walls are daubed with mud, to protect him from the storm or the changes of the weather; and he enters his new dwelling, calculating to increase his comforts at his leisure. To the flattering hopes of the settler, the evils which he dreaded at the commencement of his journey are over; and he settles down in fancied security, to dream of adding yearly to the land he now possesses, and of rivalling his neighbor in influence and wealth. But, from these fond reveries he is soon aroused to feel that all is not so prosperous and certain as it seemed. Weakened by hardships and exposure, one after another of his family sicken, and even if their lives are spared, remain for a long time enfeebled. Wearied out with watching and anxiety, he, too, becomes unwell, and in consequence disheartened. And who now, but himself, has the emigrant to blame for these misfortunes? Why, in his rashness, has he thus braved an exposure, in a new land, to evils which in no country and in no condition could he hope to pass through with impunity?

The attention of the western emigrant must be turned to this great matter. He must be made to feel that *health*, no less than riches, depend on prudence and exertion to secure their blessings. Much, nay all, of the suffering we have described, it is reasonable to suppose he may avoid. Others, with more care and foresight, have passed by these dangers, whose circumstances were at first no brighter than his own. Let his dwelling be erected before his family is removed to the spot which

he has purchased; and let it, too, be one neat in its appearance, and sufficiently spacious to contain its inmates. It is better to possess but half the land he wishes, and be the owner of a comfortable dwelling, than to suffer his desire of wealth to lead him to the sad condition we have mentioned. It is better to expend his all at the commencement, than to keep it to be drained by the demands of suffering and sickness.

It is, indeed, much to be regretted that many in the western States, whose means are ample, pay so slight attention to these most important matters. Trifling as they seem at first, they involve much of the comfort and happiness of those who may neglect them. The greater sickness that prevails in the country, than the towns, may be attributed, in no small degree, to the uncomfortable habitations scattered throughout the former. Decayed wood, no less than decayed vegetation, may be fruitful sources of disease; and yet how often is the former found, not only around but in the dwellings of the western farmer! And how easy is the substitution of tenements neatly constructed of clean boards and proper timber, with the further addition of paint or whitewash, for many of the present rude and coarse log cabins!*

Let the emigrant consider, then, how much depends upon his own exertions. Let his course be marked with prudence, care, and diligence. If disappointments come upon him, let there not be added the reproach that his

* Another source of much ill health will be removed by the substitution of wells for running brooks, whose waters are so often charged with the noxious qualities of the different soils through which they pass.

own conduct has deserved them. With the blessing of Heaven upon his exertions, he may soon reap the reward of every labor; but he also should remember, that the brightest earthly prospects may be overclouded, or the darling hopes he cherishes be blasted in a moment. Sorrow, sickness, and death, await him, wherever he may be. Let him, then, so live and act, that when he is called to part from the scene of his earthly labors, he may leave behind the record of a life spent in the advancement of the welfare of his fellowmen.

What now is the situation of the happy and successful emigrant, compared with that of many who remain behind? In the midst of all the trials he is called on to endure, and the slight privations he will undergo, are his hopes less bright than theirs, or are his joys less perfect? Has he nothing to console him for the home he left, in the new endearments of another; in the extended sphere of action and of usefulness around him; in the animating prospect of accumulating wealth; and the knowledge, that upon himself depends the height of that position which he may attain? Let him revisit the land from which he has departed; the friends and companions of his early days. How many does he find who have risen to be men of wealth, influence, and distinction, or whose advancement has been aught but an increase of years?

Gloomy, indeed, is the condition of many in the elder States of our Republic, who, in the midst of each advantage which society can give, and mocked by the tempting glitter of surrounding riches, are yet struggling in the iron grasp of poverty, disheartened by

the past, and despairing of the future. Enter, in the crowded cities of the east, the numberless abodes of suffering and want! Gaze upon the utter wretchedness of those whose unremitting labor can secure but the bare morsel that supports existence! View the coffers of each charitable institution, drained by the demands of thousands who implore its aid! Witness, in all directions, the fruitless efforts of the young, the active, and deserving, while fulfilling the requirements of the stations they may hold, to provide for coming hours of sickness or old age! Read the heart-stirring petitions of those who, laboring honestly in behalf of this great nation, are scarce able to obtain subsistence for themselves and those dependent on them; whose constitutions are enfeebled by incessant toil, and whose hopes of retaining their present situations may be blasted in a moment! Behold all these, nor wonder that, while there is a land of promise, and a home of brighter prospects, thousands, led by their allurements, should depart to seek their blessings!

CHAPTER X.

The effects resulting from the rapid means of intercourse between distant nations. The appearance of America, as presented, for the first time, to the traveller. The cause of her origin. Her present situation and prospects. The vast emigration to her borders. Conclusion of the work.

The daring and inventive genius of the present age, aided by the experience of those which have preceded it, is already meeting, in many a brilliant result, the reward of its exertions, and apparently entering on a career of conquests illimitable in extent. Before its rapid march, the barriers of time and space have nearly fallen! Empires, the most distant, have been thrown at once together; interchanges of feelings and customs are producing the happiest results, and strengthening the animating hope, that the gradual extinction of many a long-treasured prejudice will end in the formation of an indissoluble union among the nations of the earth!

The traveller, who lingers but to-day around the gorgeous scenes of oriental fable, as he leaves them with their beauties still present in imagination, can but cast a hasty glance to the intervening splendor and treasured riches of more western empires, ere he finds himself surrounded by the forest solitudes, or beside the mighty rivers and the rising cities of a newly discovered world!

And, perhaps, of all the scenes which he has witnessed, neither the bewitching romance of the one, nor the startling magnificence of the other, will so arrest and rivet his attention as that now before him. He beholds a country embracing an endless variety of

soil and climate, rich in the scenery which it presents, and inexhaustible in its fertility. He beholds portions of this wide extended country traversed by mountains, inland seas, and rivers, separated from each other, and yet finding in the cause of separation the means of a re-union. He gazes upon a people, daring even to a recklessness of danger, and hurried forward by an energy which no circumstance can baffle, and no obstacle subdue—a people, the rapid increase of whose population is without a parallel, the happy and contented citizens of a Government differing in many an essential feature from more ancient empires of the world.

And the philosophic traveller does more. He goes back amid the records of the past, to investigate the causes of that scene which thus excites his wonder. He perceives that there is much in the long history of man, which has pointed with prophetic vision to the present age; that over the dark chaos of disorganized society, there has moved a power, like that of the creation, binding together its disjointed fragments into one vast whole, nor resting from its labor till that object was attained. The rise of this great nation has been sudden, and its progress rapid; but the cause to which it owes its origin, lies far beyond the era of its birth, back in the "eldest memory of time." The story of this young republic is the last one of a volume, which records upon its pages the successive rise and downfall of many a proud empire. Its discovery and settlement, we have ever been accustomed to regard as the result of a long series of experiments upon mankind, and the approaching termination of those protracted contests

between truth and error, liberty and oppression, which have fired the path of ages with the meteor light of revolutions, and scattered through the earth the relics of destroyed nations. We stand, as it were, upon the ruins of the past—the last fond hope of freedom. Driven from the old world, she has visited the new, to rear again the temple of her worship in a chosen home. Ours is the rich heritage which had else been lost. From the tombs of departed generations, comes the voice of admonition to our ears, warning us to keep in safety the rich treasure we have gained.

There is much, too, in the present situation and prospects of this country, to encourage hope. From an origin so recent, in the providence of God she has arisen to become the pride of nations, and the envy of the world. The graves of her early founders, a little and a chosen band, are still green within our midst, while those who have succeeded to the blessings they obtained are a mighty people, known throughout the earth. The story of America, her struggles and success, has become the theme of thousands in remotest lands. To her they turn as the guardian of liberty and the home of the oppressed. And who, since such has been her birth and rapid elevation, feels not that a brighter prospect still remains. Who, gazing on America as she is, can tell the proud position that she may attain, when years shall have added to her beauty and her strength; when from the shores of the Atlantic to those of the Pacific shall extend the cities of a people, bound together in the holy bands of brotherhood, the inhabitants of one vast Government, and the defenders of one common hope! Who shall say that the foundations of

her glory are not deeply laid, or that she will not ere long ascend to a height of power and of dominion hitherto unrivalled in the history of our race!

And of all the portions of this wide-spread country, none have arisen with the same rapidity of elevation, and as much of cheering promise as the western States. Theirs has been a growth and an extension, which no other age or clime has witnessed. The startled traveller, within their borders, seems surrounded by a region of enchantment, whose invisible agents are as active and unlimited in their resources as the genii and faries of the ancient fable. Changes, the most striking, meet him at each turn! He beholds the operation of an energy, whose exertions are followed by the immediate and full attainment of its object; an energy that is ever busy in creating and again destroying the works of its creation, delighting, as it were, alone in the exertion of its powers. Forests sink before his path, and cities rise upon their ruins; while, amid the solitude of nature, he beholds the new abodes of man, and listens to the voice of welcome and of gladness.

There is much in the early history of these States, around which gathers a romantic interest. They have sprung up like the bright creations of an hour, amid the visions of a dream. Their early founders are now gone, but the recollection of their virtues will remain; and when time shall have given up to fiction much that is now reality, poetry will go back to the scenes of their struggles, and the stories of their daring, as to the richest storehouse of its treasures. Nor will it go back to them alone. Before the rapid march of civilization, as witnessed there, is now retreating the miserable remnant of

a once proud people. The tear of compassion is well due to their sad fate! Step by step has their broad empire been wrested from their grasp. Their council fires are extinguished; the day of their glory has gone by; and the hour of their destruction seems at hand! They are at best a broken and despairing people. By the side of some forest stream, or along the borders of some deserted prairie, may be found a few solitary wanderers, who can only feel that, like the waters of the one, are departing their long-cherished hopes; or, like the unbroken solitude of the other, is the fearful desolation of their hearts. Some may be seen still lingering around the graves of their departed warriors, as a last act of regard, ere they depart beyond the waters of the Mississippi, to a land humanity has prepared for their reception. But, alas! humanity cannot restore to them the treasure they have lost. It may extend their miserable life a little longer, or scatter a few comforts in their rugged path; but the death-song of their nation will ere long be sung! The seal of fate is set upon them; and in a few short years the echo of some solitary paddle, or the shrill whoop of some companionless Indian, will be all that remains of one great and mighty nation, removed, in the providence of God, for the introduction of another.

Such are some of the reflections which occur while contemplating the origin and situation of a country, to which, more than any other, is directed the attention of the world. The friends and the enemies of freedom look to America as the last great field of conflict, where the destinies of Liberty must be decided. We, the favored inhabitants of a country such as this, may

neglect, in the day of our prosperity, the high trust committed to our care. But there will be those in other lands whose hearts will cherish the remembrance of what we forget. Thousands beyond the Atlantic, wearied of oppression, are now emigrating hither, to a dearer land. Little do we know of the fond hopes that animate their bosoms, as they bid adieu to the home and the endearments of past years, and depart, like the pilgrims of old, from the land of the Egyptians, with its sufferings and bondage.

America (says Douglass) is to modern Europe what its western colonies were to Greece, the land of aspirations and dreams; the country of daring enterprise, and the asylum of misfortune, which receives alike the exile and the adventurer, the discontented and aspiring, and promises to all a freer life and a fresher nature. The European emigrant might believe himself suddenly transported to a new world, governed by new laws, and finds himself at once raised in the scale of being. The pauper is maintained by his own labor, the hired laborer works on his own account, and the tenant is changed into a proprietor; while the depressed vassal of the old continent becomes a co-legislator, and is ruler in a Government where all power is from the people, and in the people, and for the people. The world has not witnessed an emigration like that which is taking place to America, so extensive in its range, so universal in its consequences, since the dispersion of mankind, or perhaps since the barbarians broke into the empire, when the hunter or pastoral warrior exchanged the lake of eagles, or the "dark mountains," for the vineyards and olive-gardens of the Romans. As attraction in the material world is

ever withdrawing the particles of matter from what is old and effete, and combining them into new and more beautiful forms, so a moral influence is withdrawing the subjects of the old and worn Governments of Europe, and hurrying them across the Atlantic, to participate in the renovated youth of the new republics of the west; an influence which, like that of nature, is universal and without pause or relaxation. And hordes of emigrants are continually swarming off, as ceaseless in their passage, and crowded, and unreturning, as travellers to eternity. Even those who are forced to remain behind, feel a melancholy restlessness, like a bird whose wing is crippled at the season of migration, and look forward to America as the land of the departed, where every one has some near relative or dear friend gone before him. A voice like that heard before the final ruin of Jerusalem, seems to whisper to those who have ears to hear, let us depart hence."

Such is the emigration to a country favored above all others, as the home of liberty! to a nation that stands the last in the long line of departed generations! Of the mighty empires that, starting at the birth of time, were to run the course of their existence, how few, alas! remain. The cities of the plain are gone! Babylon and Ninevah have become a by-word! Egypt, once the cradle of the arts, is now their grave! Of Greece, how truly has the poet said—

"'Tis Greece, but living Greece no more."

The forum of ancient has become the market-house of modern Rome. Her capitol, that once rung with the triumphant shouts of thousands, is now the solitary

convent of the abbess and the nun, while the friar tell his beads beside the statue of Venus or of Jove! The fountain of Egeria, Rome's oracular divinity, is there, but the soul that spoke its oracles is gone. The herbage that adorns its borders is as green as ever; but, alas, there is no shepherd to breathe out his passion, no shepherdess to listen to his tale of love.

And such, too, is the country we are called on to preserve. The world is filled with the melancholy relics of departed grandeur! From the ruins of each fallen nation comes the voice of deep warning to our own. Like them we may go down in our prosperity, and the place we occupy be desolate. Guided, then, by the admonitions of the past, let us cherish those firm principles of action which alone insure our safety; let us honor the institutions of virtue and religion, left us by our fathers! Thus shall we remain unharmed, and thus shall the coming days of our republic be even brighter than the past.

And, above all, let us guard against contentions, schism, and disunion! Pluck not a single plume, cripple not one pinion of the heaven-daring bird we have chosen as our symbol. Let his flight be still as far, as strong, as fearless! Let him soar amid the full effulgence of a noon-day sun, and that the sun of liberty. Remember he was once the guardian of Roman freedom, and that his last mournful hoverings were over her departed glories, ere he plumed those pinions for another land!

Pluck not out one star from the rich group that sparkles in our country's banner! Let them shine in all the brightness of untarnished lustre, as a beacon to the

storm-tost nations of the earth, of the home which they adorn. Let them shine, outshone by none save those brighter constellations of a world above!

PAGE'S DITCHING AND BANKING MACHINE.

The above mentioned machine is worked by the power of one horse, in the form as shown in the annexed cut:

A, A, A, are the arms on which the cutters are fastened to form the shape of the ditch.

B, B, are receivers or filling baskets, to carry up and discharge the dirt.

C, a platform or shute, to deposite the dirt on the bank as wanted.

D, D, are the upright posts on which the main journal rests.

E, E, are the wheels on which the machine rests, to be moved forward as fast as the ditch is cut, as will be hereafter described.

F, is the main geer driven by G, G, G.

H, is the long shaft connecting G, G.

I, is the platform over which the horse travels.

J, is the capstan.

K, is a double and single block forming with the rope a tackle, the fall of which passes round the capstan, and over the pully T, along the side of the shaft H, under the pully U, to the hand of the conductor.

L, is the sweep to which the horse is attached.

M, M, are small trucks, which run upon shifting planks V, V.

N, is the main journal, on which the arms A, A, A, are hung.

O, O, are braces to support the post W, on which the platform C rests.

P, P, are sod cutters on guide wheels.

Q, is a tiller, to give direction to the machine.

R, is a small leading bar, to guide the horse.

S, S, are adjusting screws, to graduate the depth of the ditch.

T, the pully over which the rope passes.

U, is a small pully for the rope to pass round to the hand of the conductor.

V, V, are short planks 4 feet long, by 8 inches wide, and 1½ inch thick, on which the machine moves to be shifted forward at pleasure. Two other planks are used, and the wheel on the side next to the gearing, as the principal weight of the machine is on this wheel.

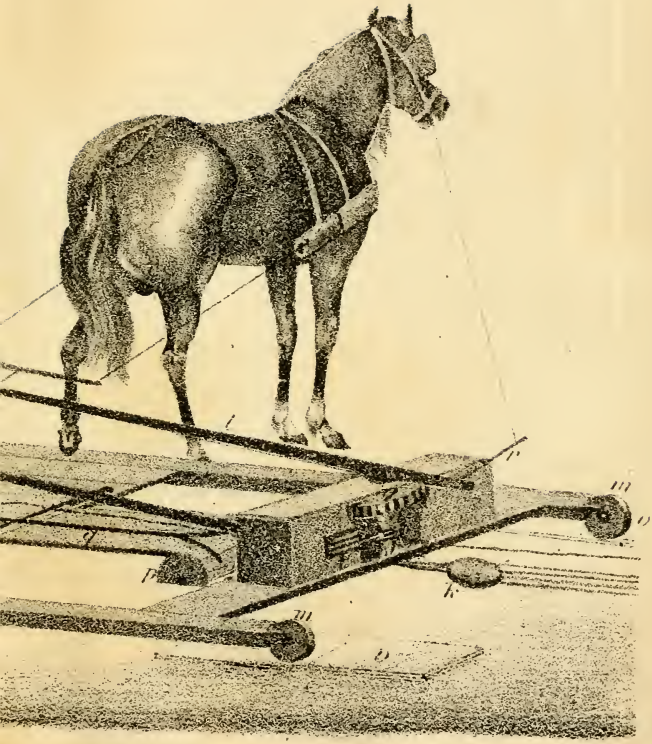
W, an upright post standing on main shaft N, to support platform C.

X, X, X, X, are cutters, to extend at pleasure from different widths of ditch.

Y, is the rope to be held by the hand of the conductor, who, by this, can advance the machine as fast as required for each cut of the arms. It is to be understood that the rope is to be held fast, after one cut is made, long enough to advance the machine the required distance for the following cutter, then to be slackened so as not to advance the machine while the cutter is performing its operation. The distance of each cut may be determined by placing a small block immediately behind the sill of the machine, and pushed up at each cut of the arms.

Z, Z, are small flat or sharp teeth, as required for the different kinds of soil.

The above machine, when in complete operation, will cut and finish, in soft alluvial soil, 20 inches per minute, or in hard clay soil from 8 to 12 inches per minute, a ditch of the following dimentions: 3 to 4 feet wide at top, 18 inches at bottom, and 3 feet deep.



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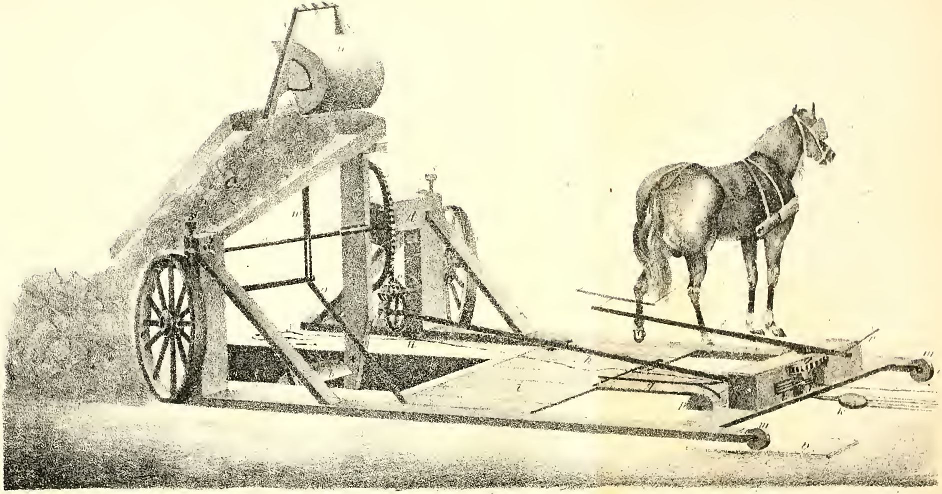

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APPENDIX.

AN ACT to incorporate the Lafayette and Danville Railroad Company.

SEC. 1. *Be it enacted by the General Assembly of the State of Indiana*, That Thomas T. Benbridge, Jacob Walker, Cyrus Ball, Nathan Jackson, of the county of Tippecanoe, and William Newell, of the county of Warren, and their successors in office duly elected as hereinafter directed, are hereby constituted a body corporate and politic, by the name and style of "the President and Directors of the Lafayette and Danville Railroad Company," shall be able and capable in law and equity, to sue and be sued, plead and be impleaded, defend and be defended, answer and be answered unto, in any and all courts of justice whatsoever; to make and use a common seal, and the same to alter, change, or renew at pleasure; and shall be able and capable in law to make contracts and to enforce the same, and to make and enforce the necessary by laws, rules, and regulations, to enable them to carry into effect the provisions of this act, and the objects contemplated by the same, not inconsistent with the laws and constitution of the State.

SEC. 2. The directors named in this act, or a majority of them, may meet at such time in the town of Lafayette as they may agree on, and organize said corporation by electing one of their body to be president, and after such organization any three of the board shall be a quorum, but after an election for directors, it shall require five to form a quorum.

SEC. 3. The corporation shall have power to appoint agents, clerks, treasurers, surveyors, engineers, superintendents, artists, and all other officers and servants necessary to carry into effect the objects of this act; they shall keep a journal of their proceedings, in which shall be entered all by-laws, rules, and regulations, and all orders for the payment of such allowances as may be made to their officers, servants, and all others in their employ, which journal shall from time to time be read by the board, and if found correct, shall be signed by the president; they may sit on their own adjournments, or on the call of

the president; when the president is absent, they may appoint a president *pro tempore:* they shall fill all vacancies that may happen in their own body.

Sec. 4. The capital stock of said corporation shall be five hundred and fifty thousand dollars, divided into shares of one hundred dollars each.

Sec. 5. The corporation shall cause books to be opened for subscription to the capital stock, at such time, in the town of Lafayette, as they may choose, after giving thirty days' notice in one or more papers published in the town of Lafayette, and if, after the books have continued so open for the period of sixty days, the full amount of capital stock shall not have been subscribed, it shall be lawful for the corporation to open the books at such other place or places as they may think proper until the full amount shall be so subscribed, first giving the length of notice above required in some newspaper convenient to such place; in each of which books the following entry shall be made: "We the undersigned, respectively promise to pay the sum of one hundred dollars, for each share of stock set opposite our respective names, in such manner and proportions and at such time as "the president and directors of the Lafayette and Danville railroad company" may direct. Witness our hands, this day of 18 ."

Sec. 6. It shall be lawful for all persons of lawful age, for the agent of any corporate body, for the agent of any State, or of the United States, on behalf of the same, to subscribe for any amount of the capital stock: and the books shall be kept open until the whole amount of said stock is taken; after which it shall be the duty of the commissioners to close said books.

Sec. 7. As soon as one-half the capital stock is subscribed for, and three dollars paid on each share, (which shall be paid at the time of subscribing,) it shall be the duty of the corporation to give three weeks' notice thereof, in one or more newspapers, and in each notice to appoint a time and place for the stockholders to meet, and elect nine directors, who shall be stockholders and citizens of the State; which election shall be held within three months after one-half the capital stock is subscribed for, and shall be conducted by two judges appointed by the stockholders present; and the persons having the plurality of the votes given and counted in public shall be declared duly elected. No share shall confer a right to vote at any election, unless the same shall have been held one month previous to the election; in all elections, each share shall entitle the holder to one vote; and votes may

be given by persons owning the same, or by one of any partners, or by the husband, father, mother, administrator, or executor, or trustee or guardian, or by the authorized agent of any corporation, State, or of the United States; or any person having a right to vote, may vote by proxy. And it shall be the duty of the directors elected as above, and those elected at all subsequent elections, to meet as soon thereafter as they conveniently can, and elect one of their own body president. The president and directors thus elected to continue in office until the next annual election, and until their successors are elected and organized.

Sec. 8. All elections after the first shall be held on the first Monday of October annually, under the direction of three stockholders, not directors at the time, to be appointed by the board at a previous meeting, or by the stockholders present; of which election twenty days' notice shall be given: *Provided*, That if, from any cause whatever, there should be no election held on the day appointed by this act, or by the directors for the first election, it shall be lawful to hold the election on any other day.

Sec. 9. Certificates of stock shall be given to the stockholders, which shall be evidence of the stock held; they shall be signed by the president, and countersigned by the clerk; the stock shall be transferable on the books of the corporation only, personally, or by an agent or attorney, or by the administrator, executor, trustee, or guardian; but such stock shall at all times be holden by the corporation, for any dues from the holder thereof to the corporation, or for any sum that may thereafter become due, on a contract made prior to such transfer.

Sec. 10. It shall be lawful for the said corporation to unite any other railroad or canal company which may be already incorporated by this State on any part of the route of said road, or with any company incorporated or to be incorporated in the State of Indiana, or any other railroad or canal that is now or may hereafter be under the control of this State or any other of the United States for the making of a continuation of the said railroad or of any other railroad from the State line of Illinois to the town of Lafayette, in the State of Indiana, and thence to any other point in the said State of Indiana, or other State of the Union, upon such terms as may be agreed upon with the directors of said company or agents authorized to manage said railroad or canal.

Sec. 11. The said corporation is hereby authorized to construct, erect, build, make, and use, a single, double, or treble, railroad or way,

of suitable width and dimensions, to be determined by the said corporation, on the line, course, or way designated by the directors as hereinafter provided, as the line, course, and way whereon to construct, erect, build, and make the same, and shall have power to regulate the time and manner in which goods and passengers and other property shall be transported, taken, and carried on the same, and shall have power to erect and maintain toll houses and other buildings, for the accommodation of their concerns, as they may deem suitable to their interests.

Sec. 12. The said corporation are authorized and empowered to borrow any sum of money upon their own credit which, in their discretion, may be deemed necessary, not exceeding the full amount of their capital stock, to aid in the construction or repair of said work, and in case it shall at any time appear to the said corporation that any part of the money so borrowed, or any paid in by the stockholders, or any surplus fund belonging to said corporation, is not necessary to be retained for immediate use, the same may be loaned on such terms as the directors of said corporation may, in their discretion, deem proper, at such rate of interest as is now allowed by the laws of this State to be taken for money loaned. But the said corporation shall in no case, either directly or indirectly, engage in any kind of trade, or deal in merchandise other than may be necessary to carry into effect the objects contemplated by this act; nor shall said corporation, under any pretence whatever, enter into banking business for the purpose of issuing bills of credit, or bills of any description to pass as a circulating medium.

Sec. 13. Whenever it shall be necessary for the construction of their single, double, or treble railroad or way, to intersect or cross any stream of water or water-courses, or any road or highway, it shall be lawful for the said corporation to construct their way or ways across or upon the same; but the corporation shall restore the stream or water-courses, or road, or highway, thus intersected, to its former state, or in a sufficient manner not to have materially impaired its usefulness; and if it becomes necessary, in the construction of said railroad or way, to divert any water-course, the matter shall be determined as is hereinafter provided for assessing damages to the owners of land through which the road may run.

Sec. 14. It shall be lawful for the company hereby incorporated, from time to time, to fix, regulate, and receive the tolls and charges by them to be received for transportation of property or persons on the

sing'e, double, or treble railroad or way aforesaid, hereby authorized to be constructed, erected, built, made, and used; and to take and receive tolls upon any part of said route, whenever and as fast as sections of ten miles are fully completed.

Sec. 15. If any person shall wilfully do, or cause to be done, any act or acts whatever, whereby any building, construction, or work of the said corporation, or any engine, machine, or structure, or any matter or thing appertaining to the same, shall be stopped, obstructed, impaired, weakened, injured, or destroyed, the person or persons so offending shall be guilty of a misdemeanor, and forfeit and pay to said corporation double the amount of damage sustained by means of such offence or injury, to be recovered in the name of said corporation, with costs of suit, by action of debt.

Sec. 16. The corporation shall have power to call for such proportions of the stock subscribed, not exceeding twenty per cent. at any one payment, as they may think proper, to be paid at such time and place as they may designate, by giving ninety days' notice in some weekly newspaper, printed nearest the place where said railroad may be commenced, or by giving written notice to the stockholders; in all such notices the amount on each share demanded, and the time and place of payment, shall be set forth; and if any stockholder shall neglect or refuse to pay such requisition, within ten days after the time mentioned for such payment, the corporation may bring suit against such delinquent, for the amount due, in any court of competent jurisdiction, and recover the amount, with two per cent. a month interest thereon, for such detention, and if the amount cannot be made on execution, or if such delinquent is out of the State, then the corporation may, by an order on their books, declare such stock forfeited to the corporation, with whatever amount may have been paid thereon, and the same shall thereby be absolutely forfeited to the corporation; and no such delinquent, after the forfeiture of his stock, shall have the right to vote for directors, or receive any dividends on his, her, or their stock, until the corporation is fully paid and satisfied.

Sec. 17. The corporation shall require of all officers and others in their employ, bonds, with security to their acceptance, with such penalties as they deem proper, for the faithful discharge of their respective duties. They shall, also, upon opening books for the subscription of the capital stock, appoint one of their number to be treasurer, who shall be required to give said corporation bond and security in such penal sum as may be deemed necessary for the safe keeping of any

funds that may be paid to said corporation, and the delivery of the same upon demand to his successor in office.

Sec. 18. The corporation, by their agents, shall have full power, from time to time, to examine, survey, mark, and locate, the route for a railroad, for a single or double or treble track, commencing on the west side of the Wabash river opposite the town of Lafayette, in the county of Tippecanoe, and running on the best ground for the interest of the company and convenience of the public, to the State line in the direction of the town of Danville, in Vermillion county, in the State of Illinois, with full power in all cases to diverge from a straight line, when more favorable ground can be had for the construction of the road.

Sec. 19. And for the purpose of making such examination and location, it shall be lawful for the corporation, by their agents and persons in their employ, to enter upon any land to make surveys and estimates, and for the purpose of searching for stone, gravel, wood, or other materials necessary for the construction of said road; but no stone, gravel, wood, or other materials, shall be taken away from any land, without the consent of the owner thereof, until the rate of compensation shall be ascertained and paid.

Sec. 20. It shall be lawful for the corporation, either before or after the location of any section of the road, to obtain from the persons through whose land the same may pass, a relinquishment of so much of said land as may be necessary for the construction and location of the road, as also the stone, gravel, timber, or other materials that may be obtained on said route, and may contract for stone, gravel, timber, and other materials that may be obtained from any other land near thereto; and it shall be lawful for said corporation to receive, by donations, gifts, grants, or bequests, land, money, labor, property, stone, gravel, wood, or other materials, for the benefit of said corporation: and all such contracts, relinquishments, donations, gifts, grants, and bequests, made and entered into in writing, by any person or persons capable in law to contract, made in consideration of such location, and for the benefit of the corporation, shall be binding and obligatory, and the corporation may have their action at law, in any court of competent jurisdiction, to compel the observance of the same: *Provided*, That all such contracts, relinquishments, donations, gifts, grants, and bequests, shall be fully and plainly made in writing, signed by the party making the same.

Sec. 21. That in all cases where any person, through whose land

the road may run, shall refuse to relinquish the same, or when a contract by the parties cannot be made, it shall be lawful for the corporation to give notice to some justice of the peace, in the county where such difficulties exist, that such facts do exist; and such justice shall thereupon summon the owner of such land to appear before him on a particular day, within ten days thereafter, and shall appoint six disinterested persons of the neighborhood, who shall, after taking an oath faithfully and impartially to assess the damages, if any, view the land or materials, and after having taken into consideration the advantages, as well as the disadvantages, the road may be to the same, and shall report thereon, whether such person is entitled to damages or not, and, if so, how much, and shall file such report with such justice, whereupon said justice shall enter judgment thereon, unless for good cause shown; and in case either party should show sufficient cause why judgment should not be entered, the justice may grant a review of the premises, either with or without costs: *Provided*, That either party may, at any stage of the proceedings, appeal to the circuit court of the proper county, as in other cases; and such court shall appoint reviewers as above directed, who may report at that or the succeeding term, in the discretion of the court.

Sec. 22. And in all cases when the owner or owners of such land or materials, shall be minors, insane persons, or reside out of the county in which such land may be, such justice shall cause three notices of the application made, and of the day fixed for the appointment of viewers, to be posted up in three of the most public places in the county; and if no person shall attend on the day named in said notice, said justice shall adjourn the same until that day two weeks; at which time he shall proceed as if such person or persons had been duly notified to attend, and on such judgment being rendered, and the corporation complying therewith, by the payment of costs or damages awarded against them, the corporation shall be seized of the land or materials: costs shall be allowed or awarded against either party, at the discretion of the justice.

Sec. 23. That when said corporation shall have procured the right of way as hereinbefore provided, they shall be seized in fee simple of the right to such land, and shall have the sole use and occupancy of the same, but not to interfere with the right of way of any railroad company heretofore incorporated; and no person, body politic or corporate shall in any way interfere with, molest, disturb, or injure, any of the rights or privileges hereby granted or that would be calculated

to detract from or affect the profits of said corporation: *Provided, however*, That it shall and may be lawful for said company to agree with any company now incorporated to cross the track of any rail or other road company now incorporated, and if no such agreement can be made, then and in that contingency, the company hereby incorporated may apply by bill in chancery to a court of chancery of the proper county, who are hereby fully authorized and empowered to adjudicate the matter and determine the mode and manner of crossing, and to allow such damages, if any, as may be assessed by a disinterested jury to be for that purpose appointed by said court.

Sec. 24. The corporation shall commence the construction of said road at or near the town of Lafayette, at any time within three years, and from time to time construct so much thereof towards the point of termination as may be within the ability and to the interest of the company: *Provided*, That the road shall be completed within ten years after the passage of this act.

Sec. 25. Half yearly dividends of so much of the profits as the corporation may deem expedient, shall be made on the first Mondays of January and July, annually, unless the directors fix on a different day, and paid to the different stockholders, as soon thereafter as can with convenience be done; but no dividend shall be made to a greater amount than the net profits, after deducting all expenses; and the corporation may reserve such proportions of the profits as a contingent fund to meet subsequent expenses, as they shall deem proper.

Sec. 26. That the tolls shall, from time to time, be reduced so as the dividends shall never exceed fifteen per cent. per annum upon the capital stock actually paid in, and a failure to so reduce the tolls, shall operate as a forfeiture of the charter.

Sec. 27. It shall be the duty of the corporation to cause a full statement of the affairs of the company to be made and exhibited to the stockholders, at every annual election, or at any other general meeting of the stockholders.

Sec. 28. The State, in time of war, shall have the right to transport troops, munitions of war, and provisions free of toll on said road.

Sec. 29. That if said road, after its completion, shall be suffered to go into decay, or be impassable for one year, unless when the same is repairing, this charter shall be taken and considered as forfeited.

Sec. 30. This charter is limited to fifty years in duration.

Sec. 31. Nothing in this act shall be so construed as to prevent the State from constructing or authorizing the construction of other

railroad or railroads between the same or any of the points through which the railroad contemplated in this act may pass.

SEC. 32. This act to be in force from and after its passage, and it shall be taken to be a public act, and shall be favorably construed for all beneficial purposes therein mentioned.

Approved February 5, 1836.

A JOINT MEMORIAL AND RESOLUTION on the subject of the Wabash and Erie canal.

Whereas the Legislature of the State of Indiana, by an act approved January 28, 1836, entitled "An act to provide for a general system of internal improvement, has authorized and directed the extension of the Wabash and Erie canal to the Ohio river, the connexion of said canal with Lake Michigan, the construction of canals along the White Water and White river valleys; together with several railroads and turnpikes across the interior of the State, all of which improvements are designed to be connected with the Wabash and Erie canal, and through that canal with Lake Erie; and whereas the completion of the said works of internal improvement will augment the amount of transportation on the eastern section of the Wabash and Erie canal, greatly beyond that which was contemplated at the time said canal was commenced; and whereas this increase in the amount of business would seem to indicate the necessity of a corresponding enlargement of that part of the canal; and whereas a portion of said canal passes through the territory of the State of Ohio, and is under the control of that State, which creates a necessity for a co-operation between the two States; Therefore,

Resolved by the General Assembly of the State of Indiana, That the propriety of enlarging the dimensions of the eastern section of the Wabash and Erie canal, so that its width shall be seventy feet and its depth six feet, be respectfully suggested to the General Assembly of the State of Ohio.

Resolved, That the Governor of this State be requested to transmit a copy of the foregoing preamble and resolution to the Governor of Ohio.

Approved February 6, 1836.

REPORT ON THE NEW YORK CANALS.

The following extracts from the report of Samuel B. Ruggles, chairman of the Committee of Ways and Means of the Assembly of the State of New York, are richly deserving a perusal. They exhibit, in most glowing colors, the present extent and future progress of the commerce of the west. The passages referred to are as follows:

"Your committee are moreover satisfied, that the speedy enlargement of the canal (Ohio and Erie canal) is required by the best interests, not only of the inhabitants in its immediate vicinity, but by the people of every part of the State. Its annual tolls within a few years after it shall be completed, have been estimated by the canal commissioners in their recent report at no less than three millions of dollars, equivalent to an income on a capital of sixty millions. Of this large sum at least one-half (in the judgment of the commissioners) will be paid upon property passing to and from other States. It is quite evident that such an income will enable the State, after making the most judicious revision of the rates of toll, to extend its fostering aid to every portion of its territory, however remote or sequestered. The speedy securing of such a result is, therefore, an object of general importance.

"The canal, when enlarged, will be greatly increased in value and power; and in point of magnitude will be one of the most important works, not only of this country, but of the age. Its capacity will exceed that of the present canal at least seven-fold, being seven feet deep and seventy feet wide, with double locks of enlarged dimensions throughout the whole line; and it will furnish the means of convenient transit for not less than ten millions of tons annually. The supply of water will be abundant and unfailing, and the enlarged size of the boats by which it will be navigated, will reduce the cost of transportation nearly one-half; so that if the tolls should even be retained at their present rates, the saving to the community in the aggregate expense of conveyance, would be from one-fourth to one-third of the amount now paid. To effect this saving, it will become necessary, however, to complete the enlargement throughout the whole line, and thereby avoid the cost of trans shipment, and in that point of view the work involves financial consequences necessary to be considered. By proper efforts the enlargement may be completed and made available within five years.

"The steady progress of population and wealth of that portion of our State which is tributary to the canal, needs little remark. Whether

owing to the growth of the country on its immediate borders, or to the influence of the lateral canals, in swelling its commerce, the tables of tonnage exhibit a rate of increase which will probably be maintained for many years. Although the contribution thus furnished by this State to the revenues of the canal, at the present time, is large, (for two-thirds of the whole of its tolls are now drawn from the trade of our own people,) yet the amount becomes relatively unimportant, when compared with the enormous results we are hereafter to derive from our commerce with the west. Let us then advert briefly to the present extent and future progress of that commerce, and the probable effect which it is hereafter to produce upon our fiscal affairs.

"The western termination of the Erie canal looks out upon Lake Erie, the most southerly and central of that great chain of navigable lakes, which stretches far into the interior from our western boundary. Around these inland seas, a cluster of five great States is rapidly rising.

"This group of inland States has two outlets for its trade to the ocean; one by the Mississippi to the Gulf of Mexico; the other through Lake Erie and the navigable communications of this State to the Atlantic. Whether it be attributable to similarity of origin, or laws, or habits, or to ties of consanguinity, or superior salubrity of climate, this people evidently prefer the market in the Atlantic, and they are making prodigious efforts to reach it. Three great canals, (one of them longer than the Erie canal,) embracing in their aggregate length about one thousand miles, are to connect the Ohio with Lake Erie; while another deep and capacious channel, excavated for nearly thirty miles through solid rock, unites Lake Michigan with the navigable waters of the Illinois. In addition to these broad avenues of trade, they are also constructing lines of railroads, not less than 1,500 miles in extent, in order to reach with more ease and speed the lakes, through which they seek a conveyance to the seaboard. The undaunted resolution of this energetic race of men is strikingly evinced by the fact, that the cost of the works which they have thus undertaken, (and most of which are in actual progress,) will exceed forty-eight millions of dollars; a sum far exceeding all that New York, with two millions of inhabitants, and two hundred years of accumulated wealth, has ever attempted. The circumstance, moreover, is particularly important, that the public works of each of these great communities are arranged on a harmonious plan, each having a main line supported and enriched by lateral and tributary branches, thereby bringing the in-

dustry of their whole people into prompt and profitable action, while the systems themselves are again united on a grander scale, in a series of systems, comprising an aggregate length of more than 2,500 miles, with Lake Erie as its common centre.

"The various portions of this vast work are now in a train of rapid construction. Indiana alone has 6,000 men in her employ; and Ohio, Illinois, and Michigan, are making correspondent efforts; so that it may be confidently predicted that, within seven years from this time, the whole inland trade of that broad region round the lakes, will crowd the entrance of the Erie canal on its way to the Atlantic.

"And here it may be proper to remark, that the whole of the tonnage to be furnished by these communities, whatever may be its bulk, will pay a transit duty to this State for the whole length of the canals; and will therefore yield to our treasury a revenue twice as large as a similar quantity of products from the districts of our own State, midway between the lakes and the Hudson.

"And what will be the amount of this tonnage, and by what standard shall we measure it?

"If we take the area and the products, and the population of our own State as a guide, we fall far short; and even if we resort to more populous nations—if we select England or France, and compare their productive power with that of this youthful and rapidly increasing race, the parallel will not be complete; for a much smaller proportion of the inhabitants of those kingdoms is devoted to agricultural pursuits, and their commerce is not wholly concentrated within any single channel.

"But we, fortunately, possess an adequate and appropriate standard in the Mississippi river, the great rival and competitor of the Erie canal, with which it is destined hereafter to hold divided sway over the vast trade of the west. The number of inhabitants who at present employ that stream and its tributaries, for the purposes of conveyance, is scarcely five millions, and yet the amount which they paid during the last year for transportation on its waters, was between eight and nine millions of dollars.

"The momentous question, whether the tonnage of the inland district under examination is to seek the Atlantic through the Erie canal, or descend the Mississippi to the Gulf of Mexico, is mainly to depend upon the comparative cost of transportation. But when we consider the circuitous course of the Mississippi, and the loss of time in ascending its strong current, and the greater rapidity of communication presented by the Atlantic route; when we advert, moreover, to the ample

volume and trifling lockage of the enlarged canal; and especially when we estimate the commercial effects of the navigable passage opened by the Hudson through the Alleghany ridge, we shall perceive that, when the artificial communications now constructing by these interior States shall be put in full operation, the cost of transporting agricultural products from the interior of this district will not materially vary, whether carried to the Atlantic or the Gulf of Mexico. The inference, then, may safely be drawn, that whenever a population of five millions around these western waters shall resort to the Erie canal for the means of conveyance, they will supply it with an amount of tonnage equally great with that now transported on the Mississippi by an equal number of inhabitants.

"It is estimated that the agricultural products which annually descend the Mississippi and its tributaries, have already reached $70,000,000. The value of the property transported on the canals of the State of New York during the year 1836 is shown by official tables to be $67,000,000. Of that amount, it may be estimated that $50,000,000 consisted of property belonging exclusively to a portion of the population of this State, not exceeding a million and a half in number, being at the rate of $33 33 for each inhabitant; and the amount which they paid for its transportation exceeded two millions of dollars. If the same scale of production and consumption shall be assumed for the population in the district in question, (and no reason is perceived why it should not be,) the six millions of inhabitants in the west who will resort to the Erie canal for the means of conveyance, will furnish tonnage, in exports and imports, of at least $200,000,000 in value. The experience of other nations will show that this amount is not over-estimated. The food produced in England alone in the year 1835, by an agricultural population of about eight millions, was valued by their political economists at $604,000,000; and that of France was ascertained by its Minister of Finance to be 5,237,000,000 of francs, or $980,000,000.

"But there are peculiar reasons why the proportion of agricultural exports of this great inland population should far exceed that of other nations. The exuberance of their soil, the salubrity of their climate, and the cheapness of their lands, (arising from the vast supply within their limits,) will enable them always to furnish food to every other portion of the continent, on more advantageous terms than it can be elsewhere produced. Labor there reaps its best reward, and harvests of an hundred-fold repay its exertions; and such will always be the superior productiveness of this region, that when the great series of public

works shall be completed, and a bushel of wheat on the plains of Indiana shall be bought within a few cents in price of a bushel in New England, its production in New England must cease. The same cause will probably operate to change the culture of portions even of our own State; for the unequalled fertility of the west will always enable it to supply those products requiring richness of soil with a less amount of labor, and, consequently, at a cheaper rate than they can be produced within our own borders.

"The consequences, then, of perfecting our systems of inter-communication will inevitably be a distribution of labor, on a grand scale, throughout the whole northern part of the continent: the maritime portions engrossing the active pursuits of navigation, commerce, and manufactures; while this central group of agricultural States will become the common granary of the Union, and discharge the important duty of supplying subsistence to all the surrounding communities. Indeed they have begun to perform that office. The valleys of the Miami, the Wabash, and the Illinois, are already pouring out their overflowing riches upon the cotton planting States below; and, although their power of exportation has hitherto been kept in check by their rapid increase in numbers, yet it is stated that, during the last season, exports amounting to fifteen or twenty millions of dollars descended the Mississippi and its tributaries, from that part of the valley north of the Ohio, and constituting a part of the great district in question. Nor is this descending stream of trade wholly withdrawn from our own channels of conveyance; for its proceeds find their way by a circuitous course through the canals of New York, and in that form swell the revenues of the Treasury: and it strikingly illustrates the value of the Union, in binding in bonds of mutual benefit all our commercial interests, both foreign and domestic, and in animating every portion of our various industry, that the food thus exported from the inmost recesses of the west, exchanged for cotton at the mouth of the Mississippi, exported in that form to the workshops of Europe, again exchanged for their fabrics, and brought home by our shipping to the seaports of the north, is at last returned through the Erie canal to the luxuriant valleys from which it first originated; thus revolving through the whole circle of our wide spread commerce. And it is only when we view the Erie canal as one of the mighty segments of that vast circle, that we can adequately estimate the importance and grandeur of its connexions.

"It is necessary, also, to be apprized of the course of this trade, in

order to explain the disparity in value which will always exist beween the descending and the ascending cargoes. The amount of merchandise now sent into the western States very far exceeds that of their products reaching the Atlantic seaboard. An additional reason exists, it is true, for this difference. The flood of emigration which has poured into that portion of our country has temporarily produced so great a disproportion between its consuming and producing classes, that they have scarcely been able to obtain an adequate supply of food even from their own exuberant soil. Population has outstripped production; and their agricultural products, instead of seeking a market in the eastern portions of the Union, have been sent westward in large quantities into the upper lakes; and so active is the movement throughout all that region, that more than four hundred vessels, during the last year, reached the port of Chicago, at the southernmost extremity of Lake Michigan. So long as this great influx of population shall continue, the present capacity of these interior States to supply tonnage for the Erie canal will be necessarily diminished; but the effect will be only to augment more enormously their eventual power of exportation, and thus the present temporary check is but adding increased energy to those causes, which are operating with concentrated force to swell our future commerce.

"The progress in population of that portion of this inland territory immediately adjacent to the lakes, has been three times as great as its progress in the portion adjacent to the Ohio. The ratio of increase in the former, between the years 1820 and 1830, (as shown by the census,) was 130 per cent., and in the latter only 44 per cent.; and the comparative rates since that time have not, probably, lessened. And this circumstance explains why so large a surplus should have been furnished for exportation from the section near the Ohio, in comparison with that which has hitherto found its way from the lakes into our canals. The total amount of tolls, realized by our treasury in the year 1836, for the property passing to and from the country surrounding the lakes, was only $385,000, or less than one-twentieth part of the sum paid annually for transportation on the Mississippi and its confluents. To fix the precise period when the population, now swarming into this district, will reach the point when their power of furnishing products for exportation will begin fully to exhibit itself, is, of course, impracticable. The same causes which operate to diminish their exports, now that their population has reached to three millions, may not be wholly removed when its numbers shall be doubled. It is

probable, however, that before that time they will be so firmly seated on their productive soil, as to be able to supply a large surplus of food for export.

"We know that the western part of our own State is increasing in numbers, with considerable rapidity, and yet that it furnishes an export of at least $20,000,000 in value. The States of the west, around the lakes, by the year 1845, will probably hold the same relative position in respect to the whole of the Erie canal, which the counties of New York, west of the Seneca lake, now bear to that part of the line east of Utica. Our trade will then be measured, not by counties, but by sovereign States, themselves containing their fifty counties; and our revenues, then no longer dependent on the villages and townships scattered along the borders of the canal, will be drawn from the widespread and populous communities, inhabiting the broad expanse between the Ohio and the lakes.

"We obtain, then, from this view, the following facts, by which to guide the present inquiry:

"That the value of the tonnage, annually transported on the canals of this State, being $67,634,000, and the tolls paid being $1,614,000, the rate of toll is about 2 3-10 per cent. on the value of the tonnage;

"That this rate, increasing according to the distance from tide water, of the place from and to which the tonnage is transported, the rate paid on the western section of the Erie canal, is, probably, as high as four, or even five per cent. (The present toll, of 32 cents, on a barrel of flour worth $8, passing the whole length of the canal, is 4 per cent., or 5 per cent., if valued at $6;)

"That the rate of toll, on commodities passing to and from the States west of Buffalo, may, therefore, be safely assumed to be equal to at least *two* per cent. on their value; and it is believed that the interests of the State will not require a reduction of the tolls below that rate;

"That a population, within this State, of one million and a half of inhabitants, furnished a tonnage of $50,000,000 to the canals; and that, therefore, the population of the States in question, when it shall amount to six millions, can furnish a tonnage of $200,000,000. It may, however, be allowed, that a considerable portion of their exports, and perhaps 4-10ths will continue to descend the Mississippi and its tributaries, and that 1-5 of their imports may ascend that stream.

"We then have these results:

Descending cargoes, after deducting 4-10ths - - -	$60,000,000
Ascending cargoes, after deducting 1-5th - - -	80,000,000
Total trade	$140,000,000

"At the present rates of toll, say at four per cent., this trade would yield an annual revenue to our treasury of $5,600,000; and if reduced to two per cent., it would yield $2,800,000; and even at one per cent., (equal to two cents only on a bushel of wheat,) it would yield $1,400,000.

"For these reasons, then, the committee have come to the conclusion that the estimate of the canal commissioners, that the tolls of the canal, when enlarged, will, at the present rates, pay annually three millions of dollars, and that one-half of that sum will be received from property passing to and from other States, is, to say the least, not exaggerated.

"It will be observed, that many of the views which are above taken of the future magnitude of our inland commerce, will be applicable to the two lines of railroad which are to traverse our territory from the Hudson to Lake Erie. The immense effects which these wonder-working instruments of commerce are to produce in securing the trade of the west to the Atlantic States, and in binding the most distant portions of our country in bonds of beneficial intercourse, need not at this time be adverted to. It may, however, be asserted, that these thoroughfares of trade and travel, so far from lessening the commerce of the canals, will more probably serve to secure and increase it, by affording the means of rapid transportation for property and persons, during those winter months in which their navigation is impeded, and thereby preventing the diversion into other channels of those more bulky products which furnish to canals their most lucrative revenues.

"Regarding the event as not improbable, that the State, at no distant period, will take these great lines of railroad as public property, and that they are eventually to become a portion of our system of public works, of which all the parts will mutually sustain and strengthen each other, the growth of the west in swelling their revenues is not a matter of indifference to the public treasury.

"The committee will not trespass upon the attention of the House, by expatiating upon the grandeur of the prospect which would open upon us, were we to look beyond the brief period which the present view has embraced. It is for the philanthropist and statesman to in-

dulge those feelings of honest hope and patriotic pride, which cannot but arise, in contemplating the mighty realities which the future has in store.

"They will not attempt to measure the consequences which the completion of a great and harmonious system of intercommunication, extending into the uttermost recesses of the interior, and concentrating within our borders the trade of the most populous portion of the continent, will produce, in augmenting the aggregate riches of our State; in covering its surface with opulent cities; in swelling its commercial marine; in securing its political supremacy; and in enlarging, in all respects, its prosperity, power, and glory. Nor will they seek even to compute the pecuniary results which this vast and ever-increasing stream of inland trade, flowing through our territory for all future time, will produce in augmenting the wealth of its commercial metropolis. The history of Venice, in its palmiest days, stretching her long line of islands and colonies far into the East, and controlling, by her position, the commerce of Asia, presents but a feeble picture of the splendor and riches which our own great mart must eventually attain.

"Nor will they seek to span, within their narrow arithmetic, the pecuniary value of the illimitable west. Were they to state that, from an assessed value in 1798, of only twenty-six millions, for all the vast territory west of the mountains, stretching from the Gulf of Mexico to Lake Superior, wealth has arisen and been created within the short space of forty years to the amount of twelve hundred millions of dollars, they would have attained only the first step in that long series, by which an empire is to ascend to a height of power and dominion which the world has not yet witnessed."

AGRICULTURE AND USEFUL ARTS.

The Committee on Agriculture, to whom were referred so much of the report of the Commissioner of Patents as relates to agriculture, and also a resolution of the House of Representatives of March 5, 1838, *on the same subject, report:*

That they have had the same under consideration, and have come to the unanimous conclusion that some legislative action in the premises is imperiously demanded. Agriculture, manufactures, and commerce, have been considered the three great interests of our country; yet it is a strange and singular fact, that whilst millions upon millions

of the public treasure, drawn in a great measure from the agricultural portion of the community, have been expended to protect, preserve, and promote the interests vested in manufactures and commerce, scarcely a dollar has been appropriated, either directly or indirectly, to advance the interests of agriculture: and this fact is the more striking when it is considered how large a majority of our whole population is engaged in the cultivation of the soil, and that probably eight-tenths of the Representatives in Congress are elected by that most worthy and substantial, yet most unobtrusive and retiring class of our citizens. The committee make these remarks in no unkind feelings towards the commercial and manufacturing classes of our community; but, on the contrary, they regard them and their efforts to elevate the character and promote the interests of their country as worthy of all praise; and whilst they complain that so little has been done for the interest of agriculture, they would by no means intimate that too much has been done for our manufactures and commerce; yet the committee would draw from these facts the conclusion that, as so much has been done for two branches of our national interests, any measure calculated to promote the third, and, as your committee believe, the most important branch, ought to meet with favorable and liberal consideration from Congress. The extent of our country and the variety of climate and soil are such as to invite to the production of almost every article that will promote the comfort and convenience and even the luxury of man, and render us, in the utmost extent of the term, the most independent nation on earth; yet, although our "lines are fallen in pleasant places," and we have a "goodly heritage,' and the bountiful hand of our Creator has scattered over the face of the earth, in rich profusion, seeds and plants of every variety, as there is a peculiar adaptation of each of these productions to some particular climate or soil, our great advantages will be of little importance, unless we are enabled to avail ourselves of them. And it is a fact too well known to require argument or illustration, that many plants which are of little account in their native soil, increase in variety and luxuriance, and become of immense value, by cultivation in a foreign climate: thus, the *potato*, which now furnishes food for millions, was a few centuries ago imported into Europe merely for its beautiful flower; and the *cotton-plant*, which now furnishes the rich staple of a large portion of the Union, was scarcely known in our country fifty years ago. It is true, individual effort may do something in this matter, and the increased in-

terest which is felt by intelligent individuals throughout the Union to elevate the character and importance of agriculture may, through societies and other laudable means, do still more; yet the utmost efforts of individuals and societies are feeble and powerless, compared with even the incidental action of Government, which, with its Argus eyes and Briarian arms, may see at a single glance whatever will tend to benefit any and every portion of our country, and be enabled to collect from every part of the world, and scatter through each section of the nation, seeds and plants so adapted to our own soil and climate, as will greatly enlarge our productive industry, and diffuse plenty and happiness throughout the community. An effort of this kind by the General Government would not only be thus directly beneficial to the people, but would have a most salutary influence in raising the spirit and standard of agriculture, promoting sound intelligence amongst its votaries, and in giving a spur and energy hitherto unknown to the first and noblest occupation of man. It would incite the citizens of the old States, instead of abandoning their own sunny fields and the scenes of their earliest and dearest associations, to attempt, by the cultivation of some new article, to resuscitate their old wornout lands, which, by a continual succession of the same crops, have become, in a measure, unproductive and valueless.

The committee take great pleasure in adverting to the Treasury circular of September 6, 1827, requiring our foreign consuls and naval officers to collect and transmit to this country, valuable seeds and plants which might come under their observation abroad; but they have to lament that hitherto no effort has been made by Congress to give effect and value to an enterprise so nobly begun; and although our officers and citizens abroad have shown a praiseworthy zeal to promote the enlightened views of the Government, by collecting and transmitting valuable seeds and plants, yet, as there was no place designated for their reception, and no person charged with their preservation and dissemination, they have, in many instances, been suffered to perish, after they had reached our own ports and custom-houses; and but for the attention called to the subject by the present enlightened Commissioner of the Patent Office, the old practice of importing seeds to perish would still be continued. Your committee have, therefore, thought proper to report a bill, placing this whole matter under the charge of the Commissioner of Patents and such individuals as may be employed under him, and making a small appropriation, sufficient to cover the necessary expenses of the under-

taking, leaving it to the future wisdom of Congress to enlarge upon the plan, until, if thought desirable, an *agricultural depository and establishment* may be eventually erected here, at the capital of a great and free nation, that will do credit to her citizens, and rival the boasted establishments of Europe. Your committee have also thought proper to require that the Commissioner should make an annual report to Congress of his proceedings under the proposed act, embodying notices of valuable improvements in agriculture and in agricultural implements, and such statistical and other useful matter that may come under his observation, as may tend to prevent frauds and speculation, and the excessive importation of foreign grain, and diffuse a general information on the subject-matter throughout the whole country. Such a document your committee believe would be looked for with great interest, and be attended with the most happy and beneficial results to every portion of the community. Your committee, therefore, respectfully recommend the adoption of the bill accompanying this report, which appropriates the sum of $5,000 for the collection of seeds and plants, and the establishment of an agricultural depository in the Patent Office, and requiring the Commissioner gratituitously to distribute throughout the Union, the seeds and plants collected, and to make to Congress an annual report on the subject.

EXTRACT FROM THE REPORT OF THE COMMISSIONER OF PATENTS, JANUARY 1, 1838.

It is worthy of remark, that the provisions of the late law authorizing the reception of unpatented models and specimens of manufactures, will do much to increase the collection at the Patent Office. No exhibition in Europe, it is believed, can surpass that which will be found, in process of time, in the building now in a course of preparation for this establishment. The beautiful collections of manufactured articles at the temporary fairs of our large cities may give a faint idea of that great gallery of arts and manufactures, which will thus be permanently opened at the seat of Government, where all that is new and interesting will be added from year to year, and carefully preserved. Interest and patriotism will combine to multiply the articles deposited.

The exhibition will be continually increasing in beauty and utility; and all this, so honorable and advantageous to the country, will be

accomplished without any other expense to the public than the trifling charge of transportation from the place of manufacture.

The Patent Office has been greatly subservient to the promotion of the arts and sciences, and its late reorganization will extend, in a much higher degree, its usefulness. Without the encouragement of the patent laws, few inventions would become practically useful. By this encouragement, a stimulus is given to talent and ingenuity, and the result of human effort seems almost incredible. The inventions of the day have proverbially overcome time and space. The numerous manufactories spread over all the country, attest the patronage they have received from Government.

Of late, however, inventors have directed their attention, with peculiar interest, to the improvement of the implements of *agriculture*, and many labor-saving machines have been patented, which are of the highest utility to the husbandman. These are rapidly increasing; and it is scarcely possible to conjecture to what extent the labor of the agriculturist may be diminished, and the products of the country increased, by these improvements.

Already, the process of sowing, of mowing, and of reaping, is successfully performed by horse power; and inventors are sanguine in the belief (and probably not without reason) that the time is not far distant when ploughing machines will be driven by steam, and steam-power applied to many other operations of the husbandman. Implements of this kind will all be collected and exhibited at the Patent Office, and, from the resort of thousands to the seat of Government during the session of Congress, a knowledge of their use and practical application will be extended over the whole country. A subject intimately connected with this, is the aid which husbandry might derive from the establishment of a regular system for the selection and distribution of grain and seeds of the choicest varieties for agricultural purposes.

For commerce and manufactures, much has been done; for agriculture, the parent of both, and the ultimate dependence of the nation, much remains to be done. Husbandry seems to be viewed as a natural blessing, that needs no aid from legislation. Like the air we breathe, and the element of water, which sustain life, the productions of the soil are regarded by too many as common bounties of Providence—to be gratefully enjoyed, but without further thought or reflection. Were the two former susceptible of the same improve-

ment with the latter, who would not rejoice to enrol his name high on the list of philanthropists, by making the first experiment?

This subject has been forced on the attention of the undersigned by those who are engaged in improving our implements of husbandry. The Patent Office is crowded with men of enterprise, who, when they bring the models of their improvements in such implements, are eager to communicate a knowledge of every other kind of improvement in agriculture, and especially new and valuable varieties of seeds and plants. Hence, the undersigned has been led to receive and distribute, during the last two years, many articles of this kind which have been committed to his care; and experience has induced him to believe that there is no spot in the Union so favorable to this object as the seat of Government.

The great desideratum at the present time seems to be, that some place should be designated and known as the depository of all articles of this kind, and from whence they may be dispensed to every part of the United States.

Our citizens who are led by business or pleasure into foreign countries, and especially the officers of our navy and others in public employment abroad, would feel a pride in making collections of valuable plants and seeds, if they could be sure of seeing the fruits of their labors accrue to the benefit of the nation at large. But, hitherto, they have had no means of distributing, to any extent, the valuable productions of other climates, which patriotism or curiosity has led them to introduce into our country. To a great extent, they have perished on their hands, for want of some means of imparting to the public the benefit they had designed to confer. Those who have not considered the subject in its wide details, are very imperfectly qualified to judge of its importance.

The introduction of a new variety of wheat promises the most gratifying results in securing that important and indispensable production from the destructive effects of our severe winters.

A short time since, the most eastern State of our Union was, in a measure, dependent on others for her bread stuffs. That State is now becoming able to supply its own wants, and will soon have a surplus for exportation; and this is effected by the extensive introduction of spring wheat. Among the varieties of this wheat, however, there is great room for selection: there is at least 20 per cent. difference, if regard is paid to the quality and quantity of the crop.

From experiments made the last summer, there can be no doubt

that the crop of Indian corn may be improved at least one-third, without any extra labor; and this effected by a due regard only to the selection of seeds.

And here it may be mentioned, that an individual has devoted twenty-five years to this single object; and, from our common Indian corn, has produced a new variety, which, if distributed as it ought to be, may prove a great benefit to the husbandman and to the country.

From the samples transmitted to the Patent Office, especially from the shores of Lake Superior, there is a moral certainty of a good crop of corn in the higher latitudes, if proper attention is paid to the selection of seeds. Inattention to this subject has lost to the northern portion of our Union many millions every year. The quantity of flour (wheat, or other kind) consumed in the United States is estimated, on the highest authority, at five thousand five hundred millions of pounds: one-half of this is supposed to be wheat, which, at three cents per pound, amounts to over eighty millions of dollars; and the remainder, at one and a half cent only, amounts to over forty millions. If to this be added the vast quantity distilled and employed in the arts, and consumed by domestic animals, a conception may be formed of the importance of our crop of grain. If, then, the quantity should be increased only 10 per cent. by improving the seed, the annual gain to the country, from this source alone, would not be less than from fifteen to twenty millions of dollars. It is unnecessary to carry out this estimate to the other productions of the vegetable kingdom; the result would be the same in all. The well directed efforts of a few years might give to this generation what would not otherwise be enjoyed in the present century.

It may not be improper to add, that, if this nation should desire to make her metropolis the seat of science and the arts, this might be easily accomplished. The collections of mineralogical specimens from every section of our widely extended territory, will, it is believed, furnish a most interesting exhibition, illustrative of the geology of the country, and of its mineral resources.

The natural and practical sciences, as well as the arts, have usually found their best patron in the munificence of a wise Government. An apartment in the new building could be appropriated to the above object, in connexion with an agricultural depository.

The undersigned will be pardoned for offering these considerations in favor of agriculture, as they have been forced upon him in the discharge of his official duties; and as Congress has required him to

make such suggestions, respecting the interests committed to his care, as may seem important to the public good, he will continue to do all in his power to promote the secondary, though important, object which has thus become, in some degree, connected with the Patent Office, in the full belief that Congress will find it for the public interest, either now or at some future period, to give a more definite character to the measures which have thus been commenced for this most important object.

Very respectfully,
Your obedient servant,
HENRY L. ELLSWORTH,
Commissioner of Patents.

Hon. James K. Polk,
Speaker of the House of Representatives.

Patent Office, *Washington, February* 22, 1838.

Sir: In compliance with your request to designate the mode of accomplishing the views suggested in my annual report respecting agriculture, I would respectfully observe, that the object first to be embraced is the introduction and distribution of new varieties of seeds. Some valuable seeds may be collected from our country, but most must be imported. There seems scarcely any limit to the undertaking, since there are so many exotics or exotic species to be introduced; nor will the number ever lessen. Present varieties will no sooner be cultivated here, than others of superior kind discovered abroad.

The sexuality of vegetables is not a novel doctrine, though lately established upon the basis of logical induction.

Who has not noticed the admixture of different species of grain, by sowing the same in contiguous situations? It is no longer doubted that the vegetable, as well as animal world, can be equally improved by "crossing." Agriculturists are pursuing this process more extensively in Europe than in this country; and in Europe, also, the finest kinds of seeds are more carefully selected for cultivation. In this country, however, something has been done. A gentleman of Maryland (Mr. Baden) has raised a new variety of prolific corn, simply by attending to the selection of the best kind for twenty-five years. The stalk of corn that yielded, twenty-five years ago, only a single ear and a "nubbin," now yields

from five to eight ears. It is deeply regretted that this corn cannot be raised in the higher latitudes. Should, however, pains be taken to mix the pollen of this kind with that of early Dutton corn, the prolific and early qualities can be combined.

I will not, however, enlarge upon this point, and only introduce these remarks to show the encouragement to continued efforts. No one who has reflected much on the subject now before the committee can estimate the advantages. To accomplish the object suggested, an appropriation of a few thousand dollars will be needed.

The force required to conduct this branch of the Patent Office will be a scientific agriculturist, one well qualified to discharge the duties of correspondent, examiner and classifier of seeds; and one or two laborers, to take care of the seeds when received, and pack up the same for distribution. It is impossible to estimate exactly the amount required for the purchase and transport of the seeds. This would depend upon the extent of efforts used, and also the degree of gratuity in the distribution.

The means to be employed will be our navy, our diplomatic corps, and numerous citizens now residing abroad.

Reciprocal exchanges with foreign agricultural societies will aid much.

For the first year I would propose the following appropriations:

The agriculturist - - - - - - -	$1,600
For two laborers, $400 each - - - - -	800
For contingencies for purchasing and distributing, and records - - - - - - - -	2,600
	$5,000

It will be the endeavor of this office to present a collection of the different kinds of grain and seeds raised in our country, with the weight, production, quality, and place of gathering the same. It is thought, also, that by the aid of the agricultural branch of this office, the Commissioner of Patents could annually report a tolerably accurate amount of the respective agricultural products of this country. This information is highly important to Government, and will secure the needy against the unjust speculations of the monopolist, founded upon a belief of scarcity, when there is a plenty in the land. I will not, however, enlarge; the subject is new, and will grow in

importance, while our main dependence for food is from the cultivation of the soil.

I herewith transmit a copy of a letter received from Mr. Baden, which proves conclusively what may be done for the improvement of our present varieties of grain.

I humbly trust the suggestions made in my report will meet the favorable views of the honorable committee. May I add that I have received many ardent letters, expressing a hope that Congress will act liberally and promptly in the matter.

I remain, most respectfully, yours,

H. L. ELLSWORTH.

BADEN CORN.

PATENT OFFICE, *January* 30, 1837.

SIR: Hearing of some great improvements that had been made in the common corn, I addressed a letter to Mr. Baden, a highly respectable gentleman in Maryland, to ascertain what facts I could on the subject.

His letter is very interesting, and I transmit you a copy of it. This experiment of Mr. Baden shows most clearly what can be done to *improve seeds, by carefully selecting each year the best kind raised.* Theoretical opinions sustain Mr. Baden; but few experiments have been tried so successfully. What might be effected for agriculture by similar efforts?

The like efforts, in improving the breed of animals, have been crowned with great success, especially in Europe. I avail myself of this opportunity to send you a small sample of the corn mentioned by Mr. Baden. I will only add, that I have conversed with several persons who have planted the "Baden corn," and the concurrent opinion of all sustain the statements made in the letter. I have a few samples, at the Patent Office, of corn raised in this neighborhood, which have four and five ears on a stalk; and I expect soon some stalks containing six, seven, and eight ears. If this corn were generally introduced, how greatly the amount of bread stuffs might be increased, *without any extra labor.* I hope some public spirited citizens will try to improve wheat, oats, barley, and other grains.

I avail myself of the opportunity to mention the introduction of the Italian *spring wheat*, with great success. A friend of mine in Co n-

necticut raised, the last year, forty bushels on an acre. This grain is heavy, makes good flour, yields well, and the crop avoids all the danger of winter freezing. I have ordered a quantity of this corn and wheat to be shipped to Indiana, and intend to try both on the fine soil of the Wabash valley the ensuing summer.

I am yours, very respectfully,

H. L. ELLSWORTH.

N. B.—Be careful to plant this corn in a place by itself. When good seed is planted in a field with poor seed the former will degenerate.

[Copy of Mr. Baden's letter.]

Near Nottingham, Prince George's county,

January 26, 1837.

Sir: I received yours of the 14th, making inquiry respecting the "Maryland corn," which you understood I had raised. I have the pleasure to say, that I have brought this corn to its high state of perfection, by carefully selecting the best seed in the field for a long course of years, having especial reference to those stalks which produced the most ears. When the corn was husked, I then made a reselection, taking only that which appeared sound and fully ripe, having a regard to the deepest and best color, as well as to the size of the cob. In the spring, before shelling the corn, I examined it again, and selected that which was the best in all respects. In shelling the corn, I omitted to take the irregular kernels at both the large and small ends. I have carefully followed this mode of selecting seed corn for *twenty-two or twenty-three years*, and still continue to do so. When I first commenced, it was with a common kind of corn, for there was none other in this part of the country. If any other person undertook the same experiment, I did not hear of it. I do not believe others ever exercised the patience to bring the experiment to the present state of perfection. At first I was troubled to find stalks with even *two good ears* on them, perhaps one good ear and one small one, or one good ear and a "nubbin." It was several years before I could discover much benefit resulting from my efforts; however, at length the quality and quantity began to improve, and the improvement was then very rapid. At present I do not pretend to lay up any seed without it comes from stalks which bear four, five, or six ears. I have seen stalks bearing eight ears. One of my neighbors informed me that he had a single stalk

with *ten perfect ears on it*, and that he intended to send the same to the museum at Baltimore. In addition to the number of ears, and of course the great increase in quantity unshelled, it may be mentioned that it yields much more than common corn when shelled. Some gentlemen, in whom I have full confidence, informed me they shelled a barrel (ten bushels of ears) of my kind of corn, which measured a little more than six bushels. The common kind of corn will measure about five bushels only. I believe I raise *double, or nearly* so, to what I could with *any other corn I have ever seen.* I generally plant the corn about the first of May, and place the hills five feet apart each way, and have two stalks in a hill. I can supply you with all the seed you may need, and I suppose I have now in my corn-house fifty, and perhaps more, stalks with the corn on them as it grew in the field, and none with less than *four*, and some *six or seven* ears on them. I will, with pleasure, send you some of these stalks, and also some seed corn, if I get an opportunity.

Early last spring, I let George Law, Esq., of Baltimore city, have some of this seed corn. He sent it to his friend in Illinois, with instructions how to manage it. A few weeks since he informed me that the increase was *one hundred and twenty bushels on an acre;* that there was no corn in Illinois like it, and that it produced more fodder than any other kind. I have supplied many friends with seed corn, but some of them have planted it with other corn, and will, I fear, find it degenerate.

I have lately been inquired of if this corn was not *later* than other kinds? It is rather *earlier;* certainly *not* later. Corn planted in moist or wet soils will not ripen so quick as that which is planted on a dry soil. In the former there will be found more dampness in the cob, although the kernel may appear equally ripe in both. In the last two years the wet seasons have injured much corn that was too early "lofted," or housed.

I believe I have answered most of your inquiries. I hope I have not exaggerated; I have no motive for doing so. I raise but little corn to sell, as tobacco is my principal crop. Should I fail to send you some seed this spring, I will next summer gather some stalks with the corn, fodder, and tassels, and all as they grow, and send to you, that you may judge yourself of the superiority of this over the common kind of corn.

Yours, &c.,

THOMAS N. BADEN.

Hon. H. L. Ellsworth,

Commissioner of Patents, Washington City.

PATENT OFFICE, *January* 1, 1838.

SIR: I have received another letter from Mr. Baden, and take pleasure in communicating the same. Allow me to add, that the experiments tried the last season show that Mr. Baden's variety of corn flourishes well in latitudes south of Pennsylvania. Some trials have been successful in New Jersey, and on Long island; and, in a few years, this valuable seed might be acclimated in the northern States.

Yours, respectfully,

H. L. ELLSWORTH.

PRINCE GEORGE'S COUNTY, MARYLAND,
Near Nottingham, November 4, 1837.

DEAR SIR: Agreeably to promise, I now write you a few lines to inform you that, within the last two years, (and never before,) there has been a report in circulation, that my corn was a later kind. However, for the satisfaction of my friends, I have made an experiment this year, which, I hope, will satisfy every one upon that point. I planted a lot of six acres and a half, (as near as I could judge by stepping,) of this kind of corn, the 20th of May last. My book is now before me. I cannot be mistaken in the date, which is more than a month later than the common time of many persons planting in this neighborhood. I gave it no extra management to hurry its growth, and determined to give it only the common routine of work that I generally give my corn. It is now perfectly ripe and hard, and has been for some time, and no frost could do it any injury in any way, and I believe it will yield as much good sound corn to the acre as any that was planted in the neighborhood any time in April, upon land of the same quality. This evidently shows that my corn is a forward kind, and will come to maturity as soon as any other. By the first opportunity, I will send you a few stalks of this corn that was planted the 20th of May, and also some that was planted the 1st of May, with the corn on them, as it grew in both the lot and field, and none with less than *four*, and some with *seven and eight good ears on the stalk;* then I will leave you to judge which of them is the better. As soon as it is sufficiently dry to shell and put up, I shall send you twenty or thirty bushels of as good seed corn as you have ever seen. I have not long since discovered something in this corn, which convinces me that I can still make a great improvement on it, by adding much to the quantity and quality of the grain on each stalk. I am now persevering in

my efforts, and intend to raise a large crop every year in its purity, to supply all who may apply for it for seed. I have been frequently requested to give a statement of my mode of planting and cultivating corn. As the planting and cultivating of corn is so generally understood, I deem it almost unnecessary to say anything upon the subject; but, to satisfy the wishes of such friends as think they can profit by it, I willingly give it. I first pulverize my land well by good ploughing, and lay it off five feet apart each way. By the 1st of May, or a few days sooner if the weather is warm, I begin planting; roll my corn in plaster, and drop three grains in each hill. As soon as I have done planting, I set to ploughing one row and leave two, and harrow over the field in this way as soon as possible, to prevent the corn from washing up in case of heavy rain, which sometimes happens. Then I plough the other two rows at my leisure. As soon as the corn is generally up, I go over and replant all the missing hills. When the corn shows well along the rows to see how to plough, (perhaps when it is six inches high or thereabout,) I then commence ploughing the second time. The best ploughman commences siding with the bar-side of his plough to the corn, and goes as close to it as he can, and throws the dirt from it. The other ploughman follows on, to plough up the middle of the rows. Their first furrows throw back and fill up the side furrow, which leaves a soft fresh bed for the young roots to run in. As soon as the field is ploughed in this way, I put the hoes in to clean out the hills and to place a little soft dirt around the corn, and, at the same time, to thin it so as to leave two of the best stalks in each hill. The third time of ploughing I turn the mould-board to the corn, and go near enough to throw the soft dirt around the stalks; that will answer the purpose of hilling, and also to cover and smother the grass that may be springing up on the hills. The fourth time of ploughing over the field I don't go so near the corn, nor quite as deep, (in particular the first furrow,) for fear of cutting the roots; and my wish is never to let it exceed ten days between the times of ploughing over the field. By this mode of working, the corn has always a soft fresh bed to grow in, and always has a healthy, thriving appearance, and I don't remember ploughing it oftener than four times, and, if the weather is seasonable, I never miss raising a good crop. I never let the suckers exceed a foot or eighteen inches high before I pull them off; the strength will then run in the stalks, which will cause them to grow larger, and they will produce more and better ears on a stalk; the grains also will be larger and heavier. I have said I planted my corn five feet apart each

way. By experience, I have found it to be near enough for our lands. Four feet apart each way, and two stalks in each hill, is near enough for the richest land with this kind of corn. I like to work my field over the first time after the corn comes up, and the fourth time when I am laying it by, with the *cultivators;* but I make no use of them in wet seasons.

Yours, respectfully,

THOMAS N. BADEN.

To Hon. HENRY L. ELLSWORTH,

Washington City.

P. S.—I can ship any seed that may be ordered each week to Baltimore, if a few days are excepted when navigation is interrupted by the ice.

DUTTON CORN.

PATENT OFFICE, *March* 12, 1838.

SIR: I have the honor to transmit a small parcel of *Dutton corn*, which is admirably adapted to all the sections of the United States where the crop is exposed to early frost.

This corn can, doubtless, be raised in every part of New England. It is productive, and will yield from fifty to seventy-five bushels per acre, if well managed. Extracts from several letters received by Judge Buel, of Albany, together with his own opinion, are subjoined.

I am, very respectfully,

Your obedient servant,

H. L. ELLSWORTH.

FAIRFIELD, OHIO, *September* 19, 1837.

J. BUEL, Esq.: The Dutton corn you sent me by order last spring to Philadelphia, came to hand about the 20th May. Some of the corn was planted as late as the 1st June, and is now sufficiently ripe to cut, while the corn we have been in the habit of planting from the 10th to the 15th May, remains soft, owing to the wet and coldness of the season. From the appearance of the Dutton corn, it will suit our climate better than any other variety we have had, or been in the habit of planting.

Yours,

M. MENDENHALL.

SELIN'S GROVE, *August* 15, 1837.

J. BUEL, Esq.: I am much pleased with the appearance of the Dutton corn. I have planted it on four farms already, with other corn. It is now in full ear, whilst that which is planted along side, is not by two or three weeks so far advanced. On the farms, its growth is quite dwarfish, compared with our other corn; but I have a lot of about one and a half acre, near my house, planted with Dutton, which stands full seven feet, if not more, full of fine ears; a majority of which have not 12, but from 14 to 16 rows of grain. Much of it now is too hard to boil.

Yours, very respectfully,

H. W. SNYDER.

PHILADELPHIA, *September* 23, 1837.

DEAR SIR: Early last spring, you shipped to me, at my request, a box of *Dutton corn.* I was induced to give it a trial, by the various favorable accounts of it in the "Cultivator," and the reputation it had otherwise acquired. The result of the trial is accurately stated in the annexed note, and may be relied on. The appearance of the crop in July, so early and so prolific, was gratifying to all who saw it. The applications for seed are so numerous, that I shall dispose of the whole crop for that purpose.

Very respectfully,

W. L. HIRST.

Hon. J. BUEL, Esq.

"BLOCKLEY GROVE, NEAR PHILADELPHIA, *Sept.* 16, 1837.

"I planted the Dutton corn in a thin orchard, of two and a half acres, preparing the ground by ploughing in the green sward and harrowing; no manure was applied. The seed was steeped, and rolled in tar and ashes, and planted about four and a half feet each way, the first week in May. I used the cultivator twice; on the 4th July, the corn was in silk, and fit for cooking in the first and second weeks in August, but it was suffered to ripen on the stalks, and cut close to the ground early this month. The fodder is very tender and excellent. The yield is about seventy bushels to the acre. The main crop on the farm is the yellow gourd, but the Dutton is far superior; one hill of the

Dutton yields more than three or four of the gourd, although the gourd seed was the best that could be procured. The two kinds of corn did not intermix; the fields were remote, and the Dutton too early.

"DAVID BURMAN."

P. S.—I trust you will not cease to press on the public the expediency of generally raising this species of corn; the crop is admirable, and even astonishing; the field, when the corn was nearly ripe, looked as if it was *all ears!*

W. L. H.

Note.—We plant 3 by 2½ feet, and get 5,808 hills on the acre. Our correspondent planted about 4½ each way, and had but 2,151 hills. Thus we obtain 3,657 hills, or more than 2½ to his one on an acre, and yet he obtained 70 bushels, without manure. We introduce this comparison to explain to incredulous readers the cause of our northern corn crops being sometimes deemed incredibly large. It is, however, to be borne in mind, that our corn is comparatively of dwarf growth, and will bear crowding more than the southern varieties.

We beg here to remark, that there is a *late* twelve rowed corn, which has been mistaken and sold for the Dutton, particularly in Berkshire county, Massachusetts. It grows stouter and taller than the Dutton, and ripens two or three weeks later.—*Cond. Cultivator.*

The public have very generally seen a letter from the Hon. H. L. Ellsworth, on the cultivation of the prairies. This letter was written nearly two years since, and much that was prophesied then, with regard to labor-saving machines, is already accomplished. Our experience confirms the statements of Mr. Ellsworth, and we avail ourselves of the opportunity to annex this interesting letter, with another from Mr. Newell on the same subjects:

Washington, *January* 1, 1837.

Dear Sir: You doubtless expect some further statement than has been received respecting the investment made for you in the valley of the Wabash. And now let me say, generally, that the west has grown, and will continue to increase beyond the most sanguine calculations. Nor will any action of the General Government materially check the advancement of the lands which are judiciously located on the great western canals or railroads. Very little is yet known of the valley of the Wabash. Although the fertility of the soil is unequalled, still few

have ever seen this country. The reason is obvious: there is no communication with it, and hence speculators and settlers have passed around it going west, either by the Michigan lake, or by the Ohio and Mississippi rivers.

Five thousand persons left Buffalo in one day to go up the lake, and yet not one went into the valley of the Wabash. A slight inspection of the maps of Indiana, Ohio, and Illinois, will show a direct route to the Mississippi, from the west end of Lake Erie, to be up the Maumee and down the Wabash valley to Lafayette. It may therefore be considered certain, that when the railroad from St. Louis to Lafayette is completed, the great travel from the Mississippi valley to the east, will be by the lakes through the Wabash and Erie canals, the shortest and quickest route by several days. A person at the mouth of the Ohio, will pass up to St. Louis, then take the railroad and canal to Lake Erie, in preference to following the meanders of the Ohio river in a steamboat. Can there be a doubt on this subject? What time will be occupied on this route to New York? Not exceeding six days. From St. Louis to Lafayette, (240 miles,) one day may be allowed; from Lafayette to the lake, at the rate of 4½ to 5 miles per hour, on the canal, (now in operation considerable part of the way,) 48 hours; on the lake, 24 hours; and from the lake to New York city, via railroad, (now commenced,) not exceeding two days.

What changes this must make in the value of property on the route! The value of land depends on the fertility of the soil and the facility of transportation. From a personal inspection of the western States, during six years past, I am fully convinced the Wabash valley has the best soil and most favorable climate. In the latitude of Philadelphia, you avoid the extreme of great heat in summer, and of cold in winter, and also the danger of early frosts, so prevalent in a higher latitude. You may ask, what will be the markets for Indiana? I answer, New York and New Orleans. The former by the Erie canal, and the latter by the Wabash river, (navigable to Lafayette for steamboats,) and by the railroad abovenamed to St. Louis, also to Montreal by the Welland canal. A choice of all these markets, equally accessible, is presented to farmers on the Wabash valley, and one peculiar advantage this valley possesses over Michigan and Wisconsin, is the early navigation of the Wabash river. The produce of this valley can, by this river, pass down to New Orleans in flat boats, free of toll, and be transported to Charleston, Baltimore, New York, and Boston, six weeks before the New York canal opens. This early market may be estimated as a good profit in business.

You may ask if the Wabash and Erie canal will surely be completed? Undoubtedly it will. Indiana and Ohio are pledged to complete it. Nearly all is now under contract, and Government has given lands adjoining sufficient to finish the same *without any expense to the States.*

As like causes (other things being equal) produce like effects, it will not tax your credulity to believe, that the rich lands of the Wabash valley will equal those on the Ohio, New York, and Pennsylvania canals, which vary from $25 to $60 per acre. Is it possible that lands yielding 40 bushels of wheat, 70 bushels of corn, 60 bushels of oats, and 450 bushels of potatoes, and with only 10 to 12 days' transportation from New York or New Orleans cities, can be less than $30 per acre?

I am sure there has been a common error to pass the rich prairie because timber could not be found adjoining at Government price. Under this belief, many settlers have, to their sorrow, entered the timber and left the prairie, because they supposed nobody would enter that without possessing the timber. This prairie has been lately entered. And such is the facility of raising timber on prairies by sowing the seed of black walnut and locust, that the desire for timber land has diminished. Those who doubt the comparative value of prairie and timber land, will do well to consider that $12 is a fair price for clearing timber land. Timber land, when cleared in the usual manner, is left encumbered with stumps and roots, fatal obstacles to labor-saving machines. $12,000 will be required to clear 1,000 acres of timber land; whereas, the 1,000 acres of prairie can be put into tame grass without ploughing.

A prairie farm may be put in complete cultivation at from $3 75 to $9 per acre, according to the computations of my son Edward, who has been extensively engaged in cultivating the prairie for the last year. The annexed letter from Mr. Newell will give much valuable information on this point.

From a personal examination of the lands in France and on the Wabash valley, I feel no hesitation in pronouncing the latter decidedly the best for the beet sugar manufacture. In France, eight, ten, and twelve dollars per acre, are paid for rent, and yet great profits are made. An acre of good land will yield 44,000 pounds of sugar beets, from which 2,400 pounds of sugar can be extracted, which, at 10 cents per pound, amounts to $240 per acre.

In England paper is now made from the residuum of beets, after the saccharine matter is extracted. An application for a similar patent is

now pending in the Patent Office. The sample of paper exhibited is very good, and the rapidity with which the paper is made must materially reduce the price of this article. Many labor-saving machines are introduced to aid in the cultivation of new lands. In a few years, it is probable that ploughing on smooth lands may be effected by steam; and even now mowing and reaping are successfully done by horse power.

Such are the profits of cultivation, that I would advise all who can, to improve some part of their lands. A small improvement will repay expenditures, and greatly enhance the value of the whole investment.

Three benefits may be expected:

1st. The crops will repay expenses and yield great profit.

2d. The land cultivated, and the land adjoining, will be advanced several hundred per cent.

3d. If stock is put on the farm, the same may be numerically increased, and greatly enhanced in value by improving the breed.

Either of these considerations is sufficient to justify cultivation, and guaranty a large return. I might mention the successful cultivation of hay in the west; from one and a half to two tons is a fair crop. This can be cut and pressed without any labor-saving machines, for $2 per ton; and if the grass was cut by horse power, the expense would be still less. The profits on 100 heifers, at $5, can be easily supposed. Fifty breeding sows would probably give 700 pigs per annum; and by these means a large farm could be stocked with little capital advanced.

Hay at New Orleans varies from $20 to $50 per ton. An average for the last three years may be $30. The cost of floating down hay in flat boats to New Orleans, may be $8 per ton.

If, therefore, 1,500 or 2,000 tons of hay could be cut on 1,000 acres, would it not be a profitable crop?

There is a practice mentioned by Mr. Newell, and highly recommended by others, of putting in hay seed without ploughing the ground. This is done by burning the prairie grass in the spring, and harrowing in the seed. The seed catches quick and grows well. Blue grass, especially, succeeds in this way, and will sustain stock all winter without cutting any hay or fodder for them. A large drove of horses were kept last winter at Indianapolis on blue grass, on the open fields, at the small expense of $1 per head per month.

From personal examination, I am convinced that ditching and hedging, as practised in Holland, England, and France, almost en-

tirely, and now successfully adopted in Illinois, is cheaper than fencing by rails.

The general complaint of the earth crumbling by frost, is prevented by sowing blue grass-seed on the sides of the ditch. Mulberry trees might be raised on the slope with great profit. Indeed, such is the rapid growth of the mulberry in these rich prairies, that land purchased at $1 25 an acre, and planted with these trees alone, would in a few years be highly valuable. Such is the extent of the prairie, that wood land will always be valuable for timber. The wood land is also rich, and fine for cultivation; and if trees under a certain diameter are cut, a fine grazing farm may be easily made, and the good timber preserved. Similar pastures are found in Kentucky; these yield $3 profit per acre, annually. It may be asked, how can non-residents best cultivate their lands? I would remark, that it is customary to rent land (once broke and fenced) for one-third of the crops, delivered in the crib or barn. At this rent the tenant finds all.

I would advise to employ smart, enterprising young men, from the New England States, to take the farm on shares. If the landlord should find a house, a team, cart, and plough, and add some stock, he might then require one-half the profits of the same. I would advise to allow for fencing or ditching a certain sum, and stipulate that the capital invested should be returned before profits were divided. A farmer could in this way earn for himself from $700 to $1,000 per annum, on a lease for five years.

The second year a mowing machine might be furnished, if 100 acres were seeded down to tame grass. Mast for swine is found in great abundance, and the number of hogs could be easily increased to 1,000, by adding to the number of breeding sows.

Corn is so easily raised, that it is found advantageous to turn the hogs into a field of this grain without gathering it. It has long been the practice in the State of New York, to raise oats and peas together, and turn in the swine to harvest the same when ripe. Experiments this summer in Connecticut, show a great profit in raising spring wheat and oats together, and feeding out the same to hogs. I have omitted to say, that good bituminous coal is found in the valley of the Wabash. The veins are from five to ten feet thick, and a large wagon load will supply one fire for a year. *Salt*, also, is manufactured in large quantities, and superior in quality to the Kenawha salt.

Farmers in Illinois and Indiana are now successfully enclosing their lands by ditching, which has cost from 50 to 75 cents per rod.

The laws of the States of Indiana and Illinois compel the owners of lands adjoining to pay one-half of fencing, whenever they make use of, or derive any benefits from, the fences of their neighbor. This lessens the expense of fencing one-half.

If it be asked, what are the profits of cultivation? I answer, if the land is rented for five years, the profits accruing during this period will repay the capital advanced in the commencement, with 25 per cent. interest per annum, and leave the farm worth $20 per acre at the expiration of the lease. Probably the profit would be much greater.

Yours, respectfully,

H. L. ELLSWORTH.

DANVILLE, *November* 12, 1836.

DEAR SIR: Your favor of August 30th was duly received: and in answer to your inquiries, I can say, that—1. "Does your prairie land bear good wheat?" None can hardly be better. 2. "How is the best way to improve prairie land?" Answer. By ploughing it in the months of May, June, and July, with a plough peculiar to this country, which cuts a furrow two feet wide, and commonly three inches deep, upon which sod corn, oats, wheat, and most kinds of grain grow well the first year, and with no further labor in ploughing. 3. "How much wheat, corn, or oats, do you realize per acre?" The first year or so, of wheat commonly 30 bushels; oats, 40 bushels; corn, 30, &c. &c. The second year, more of corn and oats, and not much of wheat. 4. "Do sod crops do well?" They generally are fine, in a good season. 5. "How much grass on an acre?" I can't say, but over two tons, when well set. 6. "Can blue grass be harrowed in on the turf?" It can, and does well. 7. "Can herd's grass also: is this the best way?" It can also, and this is the best way. 8. "Is your country good for hogs?" Not so good; it is too cold—yet there is good pork made here.* 9. "Can you keep cattle on blue grass?" They are kept by

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* Reference is here made to the *prairies*, which have no shelter for hogs. In the woods adjoining, hogs live all winter on mast, and thrive well. The Wabash valley is famous for its hogs—I have kept a large herd of swine this past summer on the prairie. Timber will soon be planted, or sheds built, and then pork can be most easily raised on these lands.

H. L. E.

some all winter on blue grass, if the snow is not too deep. 10. "Is your prairie good for beets?" It is the best for all garden stuff that I have ever seen, and there can be none better. 11. "Is there coal near you?" The coal beds here are inexhaustible; they are found almost on every considerable creek, and perhaps as much in Vermillion county as any in Illinois. 12. "What is the price of cattle now?" About $1 per cwt., and higher now than formerly, owing to the great emigration and demand for them; and from the rapid settlements, they will not be lower, most likely, for years. 13. "How do ditch and turf fences do?" As yet I have seen none upon the right plan, but a ditch and sod sown with blue grass, I have no doubt will answer every purpose, instead of fence. 14. "What is the comparative expense of rail fence and ditching?" That depends upon the distance you haul the timber. But ditching may, by proper arrangements, be done cheap.

You ask me further, whether I can furnish blue grass seed? I can to the amount of sowing 200 acres per year, price $1 per acre. This seed can also be got at Louisville and Cincinnati.

You have the goodness to say, that I may add any information in my possession. I do it cheerfully, believing that we have one of the finest countries in the United States. My experience here in farming has not been inconsiderable.

The prairie grass is an excellent substitute for tame grass, if it is well cured and cut early. This grass, early in the spring, is equal to any pasture in the old States, and some have said better; but when it becomes hard, in August and September, it is of little or no account. A man and two horses can plant and tend 40 acres of corn on the prairie, when the sod is well rotted; and as an average crop, there will be 50 bushels per acre, and sometimes more. Oats grow finely, and yield from 50 to 70 bushels, on ground well tended. I think, also, there is no country superior to ours for hemp and tobacco; at least none of the southern States in which I have been.

Sheep do as well here as in Kentucky, even on the prairie grass. I need hardly add, that this country is peculiarly adapted to the raising of mules, horses, and cattle, and they can be raised cheaper here than any State in which I have been—50 per cent. at least, I will say.

Fruit trees that I have tried have grown remarkably thrifty, and perhaps faster than in most countries; which is the case of all trees. I have growing from the seed, black and honey locust, sugar, and walnut trees, ash, and hickory—those of nine years' growth are nine inches in diameter. My pear trees, about nine inches long when

planted, produced fruit the sixth year. My apple trees, from the seed, produced the fifth year, and some of the trees this year, (the ninth year,) yielded me twenty bushels to the tree. I will not forget to mention that flax also is luxuriant in its growth here.

You have said that you have the sugar beet seed, and proffer to send me some, which will be most acceptable. I would like some of the hedge thorn for experiment also.

I live adjoining your land, and have eight persons in my family; and during this and four years past, have had none sick in my family. This, perhaps, comprises all you may wish to know about our delightful country.

I have the honor of being yours,

JAMES NEWELL.

To Hon. H. L. Ellsworth,
Washington City, D. C.

LETTER FROM JOHN WILKINSON, ESQ.

Syracuse, New York, *May* 7, 1838.

Dear Sir: I have received yours of the 1st instant, making some inquiries as to railroads, which it gives me pleasure to answer, as far as in my power.

We are now engaged in the construction of the Syracuse and Utica railroad, which is fifty-two miles long. It follows, in the main, the line of the canal, but is nine miles shorter. The canal is level, constructed most of the way upon the margin of low land. Upon twenty miles of the distance we have decided to drive piles, and have now, in very successful operation, four steam piling machines, which are substantially upon the plan of the machine for which Captain Smith Cram obtained a patent. There are now about four miles driven, and they present the most perfect grade that can be conceived. There would seem to be no doubt as to their excellence and fitness, if they can be made to endure, and I am well convinced that we can make them last a long time by salting them, and making provision to renew the supply of salt as necessary.

The structure upon piles will cost about $400 less per mile than on a graded road, as the longitudinal sills are saved.

The piles ready to receive the structure well driven, will cost us from $1,500 to $2,000 per mile. To grade in the common form, would probably cost, on an average, nearly double that.

Piles will not be disturbed by the frost, nor thrown out of level.

From this place to Auburn, twenty-six miles, a railroad has been graded, and a good superstructure laid down, upon which it is intended to lay flat iron bars as soon as the iron can be obtained. In order to have the earliest practicable use of the road, the company put on hard *maple ribbons* last fall, about three inches wide, and one and a half and two inches thick. These were united together, and spiked on instead of flat iron bars. Since then the road has been run regularly, and is now passed over six times per day. The road answers a very good purpose. Horse power alone is used upon it. Steam power, I presume, could not be used over it. The ribbons wear very well, and I have no doubt they will stand for three or four years.

You inquire how cheap a road could be built for temporary use. This depends very much upon the kind of business for which it is intended. If for passengers, then the requisite speed will require an accuracy of line, of level, and of work. If for heavy transportation, such as timber, lumber, logs, &c., I believe one answering a good purpose, upon level ground, might be built very cheap. I have heard of one for drawing out saw logs, that cost, for a mile, $800 only. So great accuracy in levelling is not required, and I should, in such a case, employ carpenters, letting them adjust the grade to the surface as far as practicable. Undulations are of little consequence.

In making such a road, I think the plan is to take the common timber of the country, and cut it into logs of eight feet long, and lay them along your line, six or eight feet apart, like cross-ties. Cut a row of gains in them, and then take also the common timber to lay lengthwise, hewed to a level surface on one side only, (the top,) and squared where the gains come, so as to fit in them. You then have two rows of timber flattened on the top like the common sills of a frame barn. Then put on these timbers, along the centre of them, hard wood ribbons, two by three or four inches, spiked down, and the road is done, except to fill in a horse track, which is done by throwing in from the side. The plan is simple, strong, and cheap, and I think will well answer the purpose.

I thank you for your report and the specimen of corn, which I shall try upon our soil. I look upon your suggestions as of the highest

HUS

REAPING

Manufactured by the Patent
fifteen acres of heavy Whea
and left in as good order for

consequence, and calculated, if carried out, to expand and improve our agricultural productions to an extent unsurpassed.

Any information in my power to communicate, I shall at all times be happy to furnish.

Very respectfully,

Your most obedient,

JOHN WILKINSON.

H. L. Ellsworth, Esq.,
Commissioner of Patents.

HUSSEY'S GRAIN CUTTER.

Report of the Board of Trustees of "the Maryland Agricultural Society," for the Eastern Shore, on the machine for harvesting small grain, invented by Mr. Obed Hussey, of Cincinnati, Ohio.

The favorable accounts of the operation of this implement in several of the western States, induced the board to invite Mr. Hussey to bring it to Maryland, and submit it to their inspection. It was accordingly exhibited in Oxford, Talbot county, on the first of July, in presence of the board, and a considerable number of other gentlemen. Its performance may justly be denominated perfect, as it cuts every spear of grain, collects it in bunches of the proper size for sheaves, and lays it straight and even for the binders. On the 12th of July, a public exhibition was made at Easton, under the direction of the board; several hundred persons, principally farmers, assembled to witness it, and expressed themselves highly satisfied with the result. At the Trappe, where it was shown by the inventor on the following Saturday, an equal degree of approbation was evinced. It was afterwards used on the farm of Mr. Tench Tilghman, where 180 acres of wheat, oats, and barley were cut with it. Three mules of medium size worked in it constantly, with as much ease as in a drag harrow. They moved with equal facility in a walk or a trot. A concise description of this simple implement, will show that it is admirably adapted to the important purpose for which it was invented. Resting on two wheels, which are permanently attached to the machine, and impart the motion to the whole, the main body of the machine is drawn by the horses along the outer edge of the standing grain. As the horses travel outside of the grain, it is neither knocked down or tangled in the slightest degree. Behind the wheels is a platform, (supported by a roller or wheel,)

HUSSEY'S

REAPING MACHINE

Manufactured by the Patentee in Baltimore. Warranted to cut fifteen acres of heavy Wheat in a day, the grain taken as clean and left in as good order for binding as when cut by the scythe or sickle

consequence, and calculated, if carried out, to expand and improve our agricultural productions to an extent unsurpassed.

Any information in my power to communicate, I shall at all times be happy to furnish.

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which projects beyond the side of the machine five feet into the grain. On the front of the edge projecting part of the platform is the cutter. This is composed of twenty-one teeth, resembling large lancet blades, which are placed side by side, and firmly rivetted to a rod of iron. A lateral motion is imparted to it by a crank, causing it to vibrate between two rows of iron spikes, which point forward. As the machine advances, the grain is cut and falls backwards on the platform, where it collects in a pile. A man is placed on the part of the platform directly behind the horses, and with a rake of peculiar construction pushes off the grain in separate bunches, each bunch making a sheaf. It may appear to some that the grain will accumulate too rapidly for this man to perform his duty. But, upon considering the difference between the space occupied by the grain when standing, and when lying in a pile after it is cut, it will be evident that the raker has ample time to push off the bunches even in the thickest grain. In thin grain he has to wait until sufficient has collected to form a sheaf.

The machine is driven around the grain, which may be sown either on a smooth surface or on corn ridges. For the first round a way may be cleared with a cradle; but this is deemed unnecessary, for the grain, when driven over, is left in an inclined position, and by cutting it in the opposite direction as much of it is saved as with a cradle. Fourteen acres in corn lands were cut between 10 A. M., and 7½ P. M. The hands had never worked with the machine before, nor was it a trial day's work; for, owing to the shortness of the straw, the machine was not allowed to cut when passing over the ridges from one side of the ground to the other, and this time was consequently lost. From the principle on which the cutting is performed, a keen edge to the cutter is by no means essential. The toughest weeds, an occasional corn stalk, or a stick of the thickness of a man's little finger, have been frequently cut without at all affecting its operation; it can be sharpened, however, in a few minutes with a file. The width of the swath may be increased by having the cutter made longer, and the same machine will cut a stubble of several different heights.

There is ample room to make the different parts of any size, though the strength of every part has been fully tested. The machine has been often choked by oyster-shells getting into the cutter, in attempting to cut too low a stubble. The motion of the machinery being checked, the main wheels slide on the ground; the strain on every part being equal to the power exerted by the horses. It can be managed by any intelligent, careful negro. We deem it a simple, strong, and effective

machine, and take much pleasure in awarding unanimously the meritorious inventor of it a handsome pair of silver cups.

ROBERT H. GOLDSBOROUGH,
SAMUEL STEVENS,
SAMUEL T. KENNARD,
ROBERT BANNING,
SAMUEL HAMBLETON, Senr.,
NICHOLAS GOLDSBOROUGH,
EDWARD N. HAMBLETON,
JAMES LI. CHAMBERLAIN,
MARTIN GOLDSBOROUGH,
HORATIO L. EDMONSON,
TENCH TILGHMAN.

[CIRCULAR.]

The undersigned have entered into partnership, by the name of Curtis and Ellsworth, for the transaction of a General Agency in the Wabash and Maumee valley, and opened an office in Lafayette, the county seat of Tippecanoe county, in the State of Indiana. They propose to purchase of Government and individuals, lands in Indiana and Illinois, for such persons as are desirous to make investments, and to take charge of the same, or of *other lands* already purchased; pay taxes, and, when requested, to put lands into cultivation, and generally, to promote, in the best possible manner, the interests of their employers.

They will also invest money on loan, and secure the same by mortgage. The opportunities for *safe* investments are worthy the consideration of capitalists and guardians. By the statute law of Indiana, the legal interest is limited to 10 per cent., and in Illinois to 12 per cent. Real estate (which is rapidly rising) can be had as collateral security, and the interest will be paid semi-annually, if desired, in the Atlantic cities. They will make investments in the stock of the Indiana Bank, which annually yields a dividend of at least nine per cent., and has a large surplus.

They also propose to secure and collect debts, for merchants and others, in the northern and eastern States, and to take a general superintendence of their affairs in the States of Indiana and Illinois; and will, on application, examine records and titles, and communicate intelligence relative to any business contiguous to their agency. A

large and constantly increasing amount of funds, deposited to their credit at the east, by those for whom they act as agents, affords unusual facilities in remitting money when collected.

Both the undersigned have resided a considerable time in Lafayette, and become, as they believe, thoroughly acquainted with the business which they propose to undertake, *and can now make investments on the lines of internal improvements to great advantage.*

Government has given lands to complete the Wabash and Erie canal, and it is expected that the whole line will be finished next year, and then a regular communication will be opened by water to the west end of Lake Erie. Half the distance is now canalled, and in successful operation. The time of travel will be only four days from New York to Lafayette.

When this avenue is opened, it is reasonable to expect that the number of actual settlers will be increased, and that lands will rise in value.

It is also thought, that by spending inconsiderable sums in *cultivation*, the lands of non-residents may be very much enhanced in value, and the undersigned are accordingly instructed to *cultivate extensively* the lands of several persons.

The richest prairie land can still be secured at Government prices; and, by the aid of newly invented ditching, reaping, and mowing machines, it is believed that the land entered can in two years be made to pay, without expense to the owner, an interest of $50 per acre.

The undersigned will take capital to invest in new lands, and allow the capitalist the legal title and a deduction of 8 or 10 per cent. interest, and divide the extra profits, which, it is confidently believed, will not be less than 25 per cent. more. Any quantity of land enclosed, with the accommodation of a small cabin, can be rented, and one-third of the crops allowed by the tenant. Sixty bushels of corn, thirty bushels of wheat, forty bushels of oats, two tons of hay, is the usual crop. More can be obtained by particular attention. Corn can be raised at six cents per bushel by contract; and this is fed to swine, which are fully fattened without further trouble, by turning the same into the fields when the grain is ripe. Several large landed proprietors have hired land ploughed, and the corn planted and well attended, for $3 to $3 50 per acre, and raised from 70 to 75 bushels on the same.

The location of the undersigned gives the choice of the following markets, all of which are open to water navigation in about the same time, viz: New Orleans, by steamboat direct, Montreal, by the Lakes

and Welland canal; also, New York and Philadelphia. It is worthy of particular remark, that at Lafayette the Wabash river opens an early market to produce, which can be shipped at small expense via New Orleans, to eastern markets, several weeks before the canals are open.

They do not wish to mislead any person, or to hold out prospects which are not likely to be realized. They believe that money can be very advantageously invested within the limits of their *agency*, and proffer whatever knowledge and experience they have to those who may be pleased to employ them. They will, at any rate, endeavor, by fidelity, industry, and activity, to accomplish the task they have undertaken.

JOHN CURTIS,
HENRY W. ELLSWORTH.

We are permitted to refer to

Hon. H. L. Ellsworth, *Washington city, D. C.*
Hon. T. L. Smith, *do.*
Com. Charles Morris, *do.*
Ramsay M'Henry, Esq., *Baltimore, Md.*
Elihu Chauncey, Esq., *Philadelphia.*
Evans Rogers, Esq., *do.*
Hon. Joel B. Sutherland, *do.*
Phelps, Dodge, & Co., *New York city.*
Spofford & Tileston, *do.*
E. M. Morgan & Co., *do.*
Petit, Dunning, & Co., *do.*
Suydam, Jackson, & Co., *do.*
C. B. Granniss & Co., *do.*
Elizur Goodrich, *Hartford, Conn.*
Harvey Seymour, *do.*
Solomon Porter, *do.*
Rev. Chauncey A. Goodrich, *New Haven, Conn.*
Hon. Gideon Tomlinson, *Fairfield, Conn.*
Hon. Joseph S. Cabot, *Salem, Mass.*
Hon. Wm. J. Grayson, *South Carolina.*

Being well acquainted with Curtis and Ellsworth, and with their location, I feel no hesitation in recommending this agency, which I am confident will be conducted with fidelity and reciprocal advantage.

H. L. ELLSWORTH.

WASHINGTON CITY, *February* 20, 1838.